THE

SOUTHERN PLANTER.

Devoted to Agriculture, Horticulture, and the Household Arts.

Agriculture is the nursing mother of the Arts.—*Xenophon.*

Tillage and Pasturage are the two breasts of the State.—*Sully.*

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TURPENTINE.

Hints for those about to engage in its Manufacture.

SITUATION.

Select your plantation as near a distillery as you can; but you may do a very profitable business six or seven miles off, if the country is favorable for hauling. If the distillery is on a river, turpentine may be hauled two or three miles and rafted down forty or fifty miles, cheaper than to haul to the still over six or seven miles. Yet persons already settled on thin pine lands, can do better to make turpentine and haul it ten or twelve miles, than at anything else they make for market.

TIMBER.

The best trees are young, thriving, on pretty good soil, of quick growth, having the most sap-wood. If found on low, level or moist lands, they will yield all the better. Dry seasons are unfavorable for a large crop of turpentine, and, of course, trees on lands that suffer easily from drouth, are least profitable. Old yellow pines run badly, and are only worth boxing when standing amidst better timber.

The thicker the growth stands the better, as close forests are less injured by hard winds than those more open, while the hand has less ground to walk over in attending his task. Forests that will not afford a task of 12,000 boxes on 200 acres or less, are hardly worth working, unless they are very near the still, or water carriage to it.

BOXING.

As the future profit of the business depends chiefly on doing this part of the work well, let it be carefully attended to, observing the following instructions:

1st. In our climate (Florida and South-western Georgia) this work must be done between the 1st of November and the 1st of March, or a little later if the spring is backward and cold, and the turpentine does not begin to run.

2d. The boxes must be cut *low down*—in small trees within six or eight inches of the ground, and ten or twelve inches in large trees. This will be at the swell of the roots, where the sap-wood is deepest, and the tree least weakened by the cut, and because the drip is more certain to fall into the box when it is cut in the projecting wood. And for this last reason, when the tree is not upright, a box must never be cut on the side to which it leans.

3d. The box should be from eight to fifteen inches long, measuring across the tree, according to its size. The lower edge or rim of the chop must be a level cut, very smooth, and have a down slope inwards of two or three inches below the outer edge. The depth from three to four inches, capable of holding a quart or more, unless in a small tree. As a general rule, the cut should extend very little into the heart-wood.

4th. The size of the tree determines the number of boxes it will bear and keep healthy. Trees under a foot thick should have but one box; those from twelve to twenty inches thick two boxes, and never more than three in any tree. Of course where the trees are scattering it may be better to cut more boxes, even if the trees do not last as long, than to lose too much time with your hands.

5th. The task for prime experienced hands is from 450 to 500 boxes a week, or 75 to 80 a day. And some expert hands will gain a day and do their work well. Such hands should be encouraged by receiving pay for extra work. But most beginners will not cut at first more than 50 boxes a day, and there is nothing gained by tasking them too high, until they have got well used to the proper shape and size of boxes.

CORNERING.

As soon as you stop cutting boxes, the hands should be set to cutting corners to them. This is done by a straight cut four or five inches up the tree from each corner of a box, and is usually done with two blows of the axe, taking out a chip half or three quarters of an inch deep, which makes a channel to catch the turpentine at the corners of the box, and serves as a guide for the chipping afterwards. A hand will corner 500 to 600 boxes a day. The turpentine from the faces and corners of new boxes will fill them, without further work, for your first

DIPPING.

This part of the business generally begins about the 1st of April, a little earlier or later according to the season.

☞ But before proceeding to dip, or even to corner your boxes, each task, where there are no natural boundaries, should be marked off by blazing a line of trees. And every task should be further divided by rows of stakes, fifty yards apart, crossing it both ways, from side to side, which will cut it up into squares of about half an acre. Without this the overseer of several hands cannot possibly inspect their work with any accuracy; nor can the hands, however faithful, avoid skipping a great many boxes in *cornering*, *chipping* and *dipping*.

1st. Before you begin to dip, place your empty barrels, thirty-five or forty to the task, at convenient distances, all ready to receive the turpentine.

2d. Each hand will require two buckets, holding four or five gallons, so that while one is dripping into the barrel he can work with the other and lose no time. The implement for dipping is made of iron or steel, something like a trowel, with a wooden handle, the blade flat, six inches wide and nine or ten long, with a rounded point, thin at the edges, and a quarter of an inch thick in the centre, and joining the handle.

3. Dipping must commence as soon as the boxes are pretty well filled, charging the hands to watch them while going over their tasks to cut corners or to chip, as trees run very unequally, and many will overflow before the rest are full.

4th. The number of dippings in a season vary from four to seven as the extremes. Below five, during the first two years, is looked on as poor, and six as very good. An early or backward spring or fall—long droughts during which the trees almost stop running—or heavy driving rains which fill the boxes with water and float out the turpentine—all have their effect on the number of dippings—which depend otherwise on the frequency and care with which chipping is done. As the plantation grows older, and the chipping extends higher up the trees, you get fewer dippings of *soft* turpentine, and a greater proportion of *hard* or *scrape*.

5th. It is not usually necessary to gather the scrape separately, until the second winter, after the boxes stop running. It will then be nearly equal in bulk to two dippings. After that it must be gathered every winter, the bulk increasing the longer the trees are tended.

6th. For collecting the scrape, instead of buckets it is better to use a box 15 or 16 inches square and 10 inches deep, supported on two short legs, so as to rest against the tree. The best implement for gathering scrape is a socket spade, so that the length of handle can be varied with the height of the work. The hard scrape will require to be trodden into the barrels.

7th. A hand should dip 1,800 to 3,000 boxes a day, or fill five or six barrels, so as to get over his task in six or eight days. It will require more time to collect the hard turpentine.

CHIPPING.

Next to careful boxing, the length of time that your trees will continue to yield, will depend upon the manner in which chipping is done.

1st. The instrument used is called a "hacker" or "shave," from its resemblance to a cooper's round shave, only that the cutting part should be shaped to a rounded point an inch or three quarters in diameter, and be supported on a strong spike, to be inserted in a handle of convenient length, according to the height of the chipping.

2d. Take care that the chip extends across the tree no wider than the box, and for new or awkward hands it will save much waste to have perpendicular lines drawn up the tree from each corner of the box.

3d. From each of these lines the chip should be cut in a down slope towards the centre of the box. Each fresh chip to be cut at the upper edge of the old one, about a quarter of an inch deep into the wood. A narrow chip or cut will bleed as freely as a wide one—half an inch is sufficient. And by this means your trees can be worked longer. If trees are skilfully chipped they will last eight or ten years.

4th. A good hand will chip over his task once a week. And, as it is important to have

it done by the strongest and most expert hands, these should be kept at it regularly through the season—while women or inferior hands can dip very well. One hand can dip four tasks, while the three best hands are kept busy chipping, and should go over the whole four or five times between each dipping. On this plan the boxes first full can be attended to without interrupting the chippers

HAULING.

One hand strong enough to load, with a pair of good mules and suitable wagon, will haul the turpentine dipped by ten hands, an average distance of three miles—with spare time for hauling provisions, empty barrels, &c; and in the winter can be employed in hauling barrel staves, ploughing in oats, or preparing ground for early peas and potatoes—so as to provide a large part of their own forage for himself and team.

BARRELS

1st The barrel is made 32 inches long, including the chines, and the head about 17 inches across, with a little bulge in the middle. The staves and heading of pine, to be three quarters or seven-eighths of an inch thick, secured with six strong wooden hoops

2d A barrel of turpentine must weigh 280 pounds, and any over or under-weight is added or taken off, as the case may be, in calculating all sales. No allowance for weight of barrel

3d. A cooper's task, when working by the day or month, is five barrels. His price is twenty-five cents a barrel for making when all materials are found him—and when he finds all, from thirty-one to thirty-seven cents a piece.

4th Heading and staves of heart pine are worth $5 a thousand Sap staves one-fourth less, as they are only fit to hold the hard turpentine or scrape. They should be got out and hacked up and dried two or three months before being worked up. Hoop poles, about six feet long, of hickory, white oak, or water oak, are worth twenty to twenty-five cents per hundred delivered.

5th. In a gang of hands getting turpentine, every fifth man may be a cooper and will be employed the year through in providing his own materials and keeping the others supplied with barrels.

GUARDING AGAINST FIRE.

The evil consequences of getting a turpentine plantation on fire are so great, as to justify the labor of hoeing around the boxes, so as to clear away all the grass and pine straw to a distance of four or five feet. This will employ a hand four or five weeks in the winter. The State ought to protect this important interest by enacting severe penalties against those who set out fire where it can extend among trees boxed for turpentine.

GENERAL REMARKS.

The turpentine business is considered a very healthy employment for hands. It may be carried on with little capital, on lands too poor for cultivation, and is, therefore, well suited to persons of small means. If there is one hand, in the poorest family, able to cut boxes and chip them afterwards, the dipping can be done by women and half-grown children. A poor family living near a still or river may make something, even if they hire the hauling.

On the other hand, no business makes better returns for common labor, take one year with another, not even the culture of cotton and tobacco, especially when the amount of capital employed is taken into consideration. A prime experienced hand, in a plantation newly opened, has gathered $600 or $700 worth of turpentine in a year, leaving a nett sum of $400 or $500, after all deductions for barrels, hauling, provisions, &c. Two hundred dollars per hand, clear of all expenses, including wages to an overseer, is a very moderate result for an average lot of hands.

The usual price for cutting good boxes is $1 per hundred, and food for the hand.

Twelve thousand boxes are an average task, in chipping and dipping. Extra prime hands have tended as high as fifteen or sixteen thousand, but ordinary hands will not do justice to more than ten thousand.

Good trees will yield about three barrels to the thousand boxes at each dipping for the first three years, one-sixth of this being *hard* or *scrape* the second year, and one-fifth the third year. The proportion of *scrape* increases as the chipping extends higher up the tree, until it makes half the crop, while the dippings or *soft* turpentine will be reduced to three or even two a year. It will, therefore, be necessary to add some new boxes to the task every year, after the fourth, to keep up the profitable business. In young, thrifty trees this may be done without increasing the bounds of a task, if the number of boxes was limited at first, as previously directed.

Virgin dip is the name given to all turpentine gathered the first year from new boxes. The first three dippings make much the brightest and best rosin, and on this account is worth fifty or seventy-five cents a barrel more than

Yellow dip, which is the name of all soft turpentine taken from the boxes after the first year.

Hard or Scrape is the name for the turpentine which hardens on the face of the chipping and never reaches the boxes This makes a pretty fair rosin, but yields not more than a third of the quantity of spirits, and is worth about half price.

The evaporation of spirits from all soft turpentine is very rapid in hot, dry weather; and this makes it important to dip and deliver it at the still without unnecessary loss of time.

Virgin dip will yield about five and a half gallons of spirits to the barrel (of 280 pounds,) for the first three dippings, and from five and a half to six gallons later in the season

Yellow dip, if delivered early, will turn out six to six and a half gallons. The scrape rarely makes as much as three gallons, very often not more than two or two and a half to the barrel.

On an average, all kinds will make two barrels of rosin from three of raw turpentine.

The distiller, therefore, will have one-third of his barrels surplus, which, with slight repairs, will serve as well as new ones for future dippings.

When Virgin dip is worth $2 50 or $2 75 a barrel, yellow dip is worth about $2, and the scrape about $1 25 a barrel

To justify the distiller in paying the above prices, spirits of turpentine should be worth 40 cents a gallon in the New Orleans market, upon the supposition that the entire expense from the still does not exceed eight cents a gallon on spirits, and 40 cents a barrel on rosin. When spirits are selling in New Orleans at 36 cents, the raw article is worth 20 cents a barrel less, at the still, at the same rate of expense in sending the manufactured article to market

The distiller incurs great expense in the single article of spirit barrels. These must be iron bound, made in the best manner, of seasoned white-oak, and well coated within with glue, to prevent evaporation. They should contain from 40 to 45 gallons, and when ready for use cost little short of $2 a piece. As there must be one spirit barrel provided to every seven of soft turpentine, the demand for these barrels will of itself open an extensive new branch of business. Let these, by all means, be made at home

A word more at the close. It is said above that a turpentine plantation will last eight or ten years This is meant for Florida and Southwestern Georgia. In North Carolina, with careful wroking, it lasts 12 or 14 years. And then begins the business of making tar from trees exactly prepared for it, by this previous culture. This is nearly as profitable as making turpentine, and will furnish employment for several years longer

REMARKS.—We are under particular obligations to John M. Potter, Esq., of Decatur county, Ga, for a pamphlet containing the foregoing information. We do not know who is the author, but doubt not the article will be acceptable to many persons seeking information on this important subject.—*Eds So. Cult.*

RIDGING UP GROUND FOR WINTER.

The following is from the Agricultural writer of the N. Y. Daily Times, and well worthy of consideration by those whose spot of land is small, showing what can be done by deep tillage and a thorough cultivation of the soil:

"We know a gardener, residing near a country town, who devotes his whole time and labor to a single acre of ground, and he raises for the market from this limited space fully enough to sustain a large family in comfortable circumstances, besides 'laying by' a little every year. His invariable practice is to throw the whole plot into high, narrow ridges every autumn, and let it lie thus until spring. These ridges are from three to four feet high when first thrown up, and are as narrow as they can well be made.

"During the winter the sides crumble down so as to partly fill up the intervening hollows; but the ridges are still elevated two feet or more at the close of winter.

"We can readily perceive the effect of such an arrangement. Owing to the narrowness of the ridges the frost penetrates to the centre of each, while in the bottom of the furrows it goes down as deeply as it would have done from the undisturbed surface, and by this means the whole soil undergoes the freezing process to a depth of nearly three feet. It is thus mellowed and fitted for the reception of the roots of future crops. The air is admitted to that depth and oxydizes or destroys the poisonous compounds that abound in all soils not subjected to its action.

"The air also circulates freely through the ridges, and deposits its rich stores of ammonia and other nutritions gases. The supplies of organic plant-food from this source saves one-fourth to one-third of the manure that would otherwise be required.

"The ground is much sooner freed from water in the spring, and more quickly warmed by the vernal sun, so that spring planting and sowing can be commenced several days earlier than on flat land, as abundantly proved by the fact that the cultivator of the above garden is always first in the market with potatoes, tomatoes, peas, and other vegetables."

JAPAN PEA.

Several years ago we received this bean, (wrongly called a pea,) from a correspondent in Europe, who spoke of it as something new in the *leguminous* way. Since then it has been distributed by the Patent Office, and highly recommended for domestic use and as food for stock. This season we have grown it in sufficient quantity to test its value for either purpose. Unless it possesses hidden virtues it is not worth cultivating, and may be classed with the number of horticultural humbugs lately imposed upon the public desire for novelty.

The Japan bean grows 2 to 3 feet high; the stalk is quite woody, with very few side branches; the *legumes* or pods are produced in twos and threes at the axles of the leaves; each legume contains two or three small round beans the size and shape of a "Tom Thumb Pea," and the flavor is not unlike that pea when fully ripe; the legumes are covered over with a stiff fuzz. Although this bean may be planted early in the Spring, it will not mature before late in the Fall, showing that our seasons are too short for its growth. It is totally unfit for food while green, and not superior to the common pea when ripe. Animals have no relish for the stalks, especially after the fruit is ripe; and when we consider that it is a great impoverisher of the soil, it is an injury to cultivate it as a crop.—*Pittsburgh Western Horticulturist.*

DESPISING HOUSEHOLD DUTIES.

From a variety of causes, nothing is more common than to find American women who have not the slightest idea of household duties. A writer thus alludes to this subject:

"In this neglect of household cares American females stand alone. A German lady, no matter how lofty her rank, never forgets that domestic labors conduce to the health of body and mind alike. An English lady, whether she be a gentleman's wife or a duke's, does not despise the household, and even though she has a housekeeper, devotes a portion of her time to this, her true and happiest sphere. It is reserved for our republican fine ladies to be more choice than even their monarchical or aristocratic sisters. The result is a lassitude of mind often as fatal to health as the neglect of bodily exercise. The wife who leaves her household cares to the servants, pays the penalty which has been affixed to idleness, since the foundation of the world, and either wilts away from ennui, or is driven into all sorts of fashionable follies to find employment for her mind."

THE COMING CROP.

The Danville Republican of Thursday says: In Pittsylvania there has been rather over an average crop sown, and in Halifax a very abundant one. In Henry county the farmers have sown unusually heavy crops; Franklin has about an average crop, and the same is the case with Patrick. A farmer from Caswell, N. C., informs us that so far as his observations go, which are quite extensive, the soil of Caswell has never contained a larger amount of seed wheat. Taken altogether, the wheat crop in this region will be unusually large, and if the season should be propitious for its growth the next yield will be greater than was ever known before.

CHICAGO BEEF PACKING-HOUSE.

When September month begins to wane and cooler days are ushered in, the drovers begin to assemble together their fatted herds, and the roads leading to Chicago are suddenly alive with bellowing droves. We will select one herd from the many that we see in tardy movement around us, and watch its progress through the various stages until it is rolled on to the dock transformed into "Extra Mess Beef." We have alighted then upon a drove of some 300 head, raised, we will suppose, in La Salle County, and contracted, some time past, to the Messrs. Hough, at the rate of five dollars per hundred weight for the beef—the offal being given in. By much whooping and chasing, the mounted drovers have brought the bewildered herd to the strong brick wall that incloses the yard; the wide gate is swung open, the cattle thrust in, and there suffered to remain awhile to collect their wandering senses.

The following morning their slaughter commences. Half a dozen noisy fellows, with poles in their hands, present themselves in the yard, and, detaching about fifty from the herd, drive them into a closer yard. This is a narrow inclosure separated from the main yard by a gate, and communicating by means of sliding doors with four close pens, where the animals are ultimately roped for the slaughter. Having driven their cattle into the smaller yard, the men continue their pursuit, and further detail four or five of the slithering brutes into each of the close pens. A door is now withdrawn from within, a powerful negro presents himself, and lassoes one of the cattle; two men then haul upon the windlass, and, in spite of the most violent bovine resistance, they draw the struggling wretch down to the bull-ring. There is some peculiar dread communicated from this negro to the

cattle, which renders the dangerous process of roping a work of comparative ease to him. But, at the other extreme pen, four white men are attempting the same task, and it is absolutely unsafe for them to show themselves within reach of the animal's horns. The axe is applied, and the animal is blooded. To each pen there is a bed, as it is called—that is, a place to dress the bullock, and one is now lying prostrate upon each of the four beds.

Now the butchers take the cattle in hand; for those we have been witnessing at work are only laborers. These butchers are a select *corps*—each an Achilles in his peaceful way. Accustomed to this wholesale mode of slaughter, where time is economized to the utmost, they have acquired a dexterity and a breadth of cut that would astonish some of our Fulton Market worthies. The cattle are poised on their backs, (*pritched* is the technical term,) and three butchers fall to work upon each One man flays the head and decapitates the animal, and one strips each side; the haunches are then cut asunder, and the bullock is raised to his "first hoist." It is a treat to see these fellows work. They are great braggadocios, and numerous pints of whiskey are pending between the rival hands upon the number of cattle each can respectively *put up*. Their work is of a repulsive character, but they evidently like it.

"The hand of little employment hath a daintier sense."

and Providence has wisely designed that, whatever his occupation, a man shall find pleasure in it. They are working against time; very little talk is indulged in, and the fast workmen keep the less skilful travelling, in order to maintain pace with them. There is no drinking except of beer—and then at a clandestine *hour*, when the master's eye is turned—and the work goes on with excellent decorum.

The first hoist is worked off, and the animal is again raised until he is landed upon the balks. These are two parallel beams with polished surfaces, running longitudinally through the building. Two laborers swing the suspended carcass back out of the way of the beds, and the butchers follow it up to finish dressing it, while the negro and his white satellites prepare another bullock for each vacant bed. This process is repeated until the day's work is achieved, and 150 carcases are suspended by their heels to stiffen until the following morning.

The next stage is in the cutting room, which is on a level with the slaughter-house, and only separated from it by the forest of the sides of beef which intervene. Here the beef is weighed, cut, cured and barreled. Immense vats are sunk on each side the building, each capable of holding twenty carcases of beef; and the pumps and the machinery for the supply and withdrawal of the brine are fitted up underneath the building. When the day's work begins, a force of men, armed with knife and saw, make an attack upon the stiffened beef, and reduce it into quarters as rapidly as they can ply their instruments. When cut down each carcass is weighed—the owner being generally present—and the beef is deposited upon two immense racks. The demolition of the quarters then begins. There are two qualities of mess beef—the extra and the prime. The extra is composed of the select cattle—the heaviest and the choicest—and it is reduced to component pieces with the knife and saw. It is packed in tierces containing 304 lbs., having 38 pieces of 8 lbs. each to the tierce. This is chiefly packed for the East India market, and particular care is bestowed upon the preservation of it. The second quality—consisting of "Prime Mess"—is made generally from a less choice quality, and is cut into pieces of no precise weight with a heavy cleaver. This beef is packed in barrels containing 200 lbs., the pieces not being enumerated, and is principally disposed of for the supply of merchant vessels.

As the cutters reduce the beef to pieces, porters are employed in removing it to the vats, where it is allowed to purify itself by a stay of one or more days in brine. When ready for the packer it is withdrawn from the vat and again removed in barrows to the scale. Here it is weighed off in drafts, and stowed compactly in barrels; a layer of dry salt is then spread over the head, and the barrel is taken hold of by the cooper and in a few moments headed up. A removal to the brine-yard, where the interstices of the contents are filled in with brine, and the barrel is finally rolled on to the dock, where it is ready for transportation. We remarked that great care was required in the cutting of the tierce-beef, since no variation is admissible in the number of pieces packed in; if the weight is deficient, the tierce would be condemned by the inspector, and if the weight overruns, the surplusage is a loss to the packers.

We were grieved in walking through this immense "manufactory" of beef, to see the many hogsheads going to waste which would rejoice so many of our needy community, could it only be transported to them. Outside of the slaughter-house we remarked a small ship-load of the livers and hearts of the

cattle, thrown aside as valueless; the hogs were putting them to use certainly; but there are many industrious fellow-creatures in New York who would be tempted to dispute their meal with them. Inside the building we saw shanks and waste fragments enough to supply soup to the indigent for the whole season. If the laws regulating the interchange of commodities could so be improved as to facilitate the transport of them directly from the producer to the consumer, we might procure our necessaries at rates nearly approximating to western prices, and the chief cause of hunger in the cities be removed.

SHELTER CHEAPER THAN FODDER.

Notwithstanding much that has been written during a few years past, especially in the agricultural journals, on the true principles of winter protection and feeding of domestic animals, there is still a great amount of costly ignorance on the subject.

Last winter we chanced upon the farm of a man who possessed a fair share of intelligence upon general matters, and we were not a little surprised to find him still clinging to the old opinion that his stock wintered better when exposed to cold than if warmly housed He kept no account of the amount of food consumed, but his observation had taught him, and truly, that his sheep, for instance, consumed more food in a cold winter than in one of moderate temperature; and he reasoned that if they ate more it indicated better health and a faster growth of flesh and wool, and of course a greater profit. Following out his opinion, he kept a flock of sheep in an open field, exposed to bleak winds and pelting storms. In this field he had placed a number of small stacks of hay, to one after another of which they had free access, and upon which they made rapid inroads. Their only shelter was afforded by the leeward side of these hay stacks and by the stone walls that surrounded the field, together with a grove upon the northern side that served to break off the wind from that direction, but from entering which they were prevented by the intervening fence. He was quite sure they ate better when thus exposed than if housed or allowed a warm shelter around and under the barn. His other stock were treated in a similar manner. Instead of warm sheds or stables, they fed and slept in a cold open yard. He said it kept them in better "heart," and gave them a sharper appetite. As to the latter he was doubtless correct.

But he, like thousands of others, had drawn his conclusions from a false theory, which a few careful experiments would have corrected. He should have considered that the profitableness of keeping animals depends not upon the absolute amount they consume, but upon the greater or less product of flesh, wool, &c., obtained from a given amount of nutriment. Had he weighed his animals in the fall and divided them, keeping one part in close warm sheds or stalls and the other part in the cold situation, he would have found that the protected animals, while consuming less food, gained more in weight than the others, and in May or June would had been in superior health and heart. In the case referred to it was found necessary to give the sheep a dose of tar, by applying it upon the noses, in the spring, to operate as a tonic, and to counteract the "running at the nose" produced by colds, which sheep "catch" as well as men.

There is a principle or two involved in feeding and nutrition which, if well understood by all who have the care of animals, would render their labor doubly profitable. The food consumed by animals serves a double or treble purpose. It supplies the waste of the system produced by the natural wear of the various organs, and keeps up respiration and the resulting heat. What is left after these ends are served goes to increase the flesh or weight.

The *wear* depends upon the amount of exercise taken; hence the more quiet animals are kept after allowing just enough exercise to preserve the organs in a healthy state, the less will be the amount of food required to supply the waste.

The heat of the body results from the consumption of carbonaceous food, especially the oily and starchy portions. The union of the carbon in a tallow candle or oil lamp with the surrounding air, producing the heat and the flame, has an exact counterpart in the lungs and blood of the animal, when the air drawn in at respiration unites with the oily or fatty matter in the blood and gives heat to the system.

On a warm day not much heat is removed from the surface of the body, and the animal breathes less rapidly and fully, and less fat is consumed to supply wasted heat.

If the same amount of oily food is consumed and digested as on a cold day, there will be a larger surplus to be stored away as fat.

As a matter of course the colder the weather the less surplus fat or profit will be obtained from the food.

Another point usually overlooked is this: In the coarser substances, such as hay and straw, consumed by animals, there is but a small proportion of oily or carbonaceous mat-

ter, and to get at this it is necessary to digest a prodigious quantity of food. This over taxes the digestive organs, and results in more or less debility.

We have here an explanation why a smaller quantity of meal, which supplies oil and starch, (both of which are rich in carbon, the chief heat-producing element,) will keep an animal in so much better health.

The principles above indicated, which are fully established by both scientific theory and oft repeated experiment, lead to the certain conclusion that, for all kinds of animals, whether kept as stock or for fattening, it is most profitable to furnish warm shelter. We repeat, a flock of sheep or a drove of cattle will without doubt eat much less food and gain much more weight if kept nearly at summer-heat during winter than if left exposed to our inclement weather.—*N. Y. Times.*

White Post P. O., Clarke Co., Va., Dec. 15, 1855.

Mr. Ruffin:

Dear Sir:—We have had no rain (or snow) to do any good, since the latter part of October. The wheat six weeks ago looked remarkably fine, but the rich worm—a large white worm—and the largest kind of dark, ash colored cut worms, have thinned it in rich land. I have, during the fall, heard complaints from up the valley of the chinch-bugs, destroying the early sown wheat. The cold, dry weather is certainly doing injury at this time. A small application of ground alum salt, where the large white worms were eating up my first sown wheat, so effectually stopped them, and the wheat grew off so finely, and continues to look so well, that I am now about to make an application of the following compost, the material for which happened to be comeatable just at this time, viz: 50 bushels of plaster, 55 bushels slacked lime sifted, 18 bushels of ground alum salt, and 78 bushels of sifted ashes, about half of which have not been dripped. I shall apply this to 100 acres as near as I can by hand. If this application benefits the wheat much I shall apply it with a larger proportion of salt next fall. I think it should be one-fifth salt, and the remainder of equal proportions of plaster, lime, and ashes. If the ashes are not to be had, I should use the other three without it. I think it would be one of the nicest things for corn, to be applied on the hill just as the corn was coming up, that was ever tried. There would be no danger from bugs or worms of any sort. I have no objection to your using the above information if you desire to do so.

Very respectfully, J. J. Hite.

P. S.—Since writing the above, we have had a shower that wet the ground two inches deep. I have sown my compost, but did not spread it over more than 70 acres. The proportions mentioned in this letter amounting to 200 bushels, after being well mixed three different times, measured up 222 bushels. I account for this from the fact that the ashes were damp, and the plaster was very compact. After it was well mixed it was light and nice for sowing as any thing of the kind could be. I had lands laid off 12 feet wide, with a plough in different places, that I and others may see if any effect can be produced by home-made compost.

Yours, &c., J. J. H.

STALL-FEEDING SHEEP.

THE PROFITS OF STALL-FEEDING MERINOS AND SAXONS FOR THE BUTCHER.

Mr. J W. Colbourne, of Springfield, Vermont, writes to the editor of *The Country Gentleman*, at Albany, N. Y., that he, being stimulated by what he had read in that paper of what one of his neighbors had done in the way of stall-feeding, tried his hand at it last winter, and kept an account of the results.

In reading the items of the cost of the feed given by Mr. Colbourne to his sheep, it will be seen that he reckons the cost of his hay at $10 per ton, and his corn at nearly double what it is worth in this State under ordinary circumstances. But we regard the fact of these fine-wooled sheep being brought to market in such fine condition, as proving that they may be kept with profit for their mutton as well as for their wool, and showing that there is not the least excuse for any farmer in this State to raise a poor coarse-wooled sheep unless he is so careless and unambitious that he is willing to let everybody else get ahead of him.

This intelligent Vermont farmer says:—"I culled one cow from my limited number of four, and dried her 1st September; fed with pumpkins and short grass until 20th November; then with corn-stalks, hay, and corn in the ear (ground) until the 22d March, when I sold her to go to Brighton market, with the following results:

Value of cow on 1st September - - - -	$15 00
Grass $2, three cart-load pumpkins, $2 -	4 00
Hay and other coarse feed through winter, - -	7 00
Corn, with expense of carrying 3 miles to mill, - - - - - - - - - -	24 00
Total cost of cow when fatted - - -	$50 00

Estimated to weigh 1,000 lbs.; sale on foot at the barn, $72; profits, $22.

Her blood was three-fourths Native, one-fourth Durham. She was large, and very fat; worth at Brighton, $7 50 per 100 lbs., which left $3 for drift, by railroad—just a fair compensation.

I also stall-fed 123 wethers, all of my own raising, four years old last May and June—a cross between the full-blood Spanish Merino and Saxony; very fine quality of fleece—a race which all wool-growers know never attain to a large size. I was offered $2 per head for them in November, and my neighbors considered it a very generous offer—it was all they could have brought at that time. I commenced feeding them with corn (except in quantity) until the

29th of March, when they went to Cambridge market, with the following results:

Sale of 133 head at $6.50 per head - -		$811 80
Value of sheep in November -	$246 00	
20 tons English hay of good quality	200 00	
200 bu. corn at 80, the market price	160 00	
Cost getting them to market by r. r.	44 28	
		650 28
Profit - - - - - - - - -		$161 52

Or a fraction over $1.31 per head.

It is a satisfaction to the grower to be enabled to say that these sheep, considering the superiority of blood for wool-growing purposes only, the fineness in texture of fleece, and the number raised and fatted in one flock, were deemed by the sheep-dealers at Cambridge equal, if not superior, to any ever taken to that market, from any one flock in Vermont.

And now a word as to the manner of feeding. My sheep and cattle-yards have open sheds, with a southern or eastern exposure. Cattle are stabled of nights, and mostly stormy days; sheep go out and in at their pleasure; pure aqueduct water in each yard, with a box of St. Ubes' salt constantly supplied, which I consider quite as essential in winter as in summer; yards and sheds kept dry by straw and other coarse litter. A large stable connected with my sheep-yard enables me to shut them off when putting hay into their racks or grain into their troughs, so that they all go to their feed together and share as equally as possible. I commenced this flock of wethers with 20 quarts of corn per day, and from time to time increased gradually as they would bear it, without producing the scours, until they would take 70 quarts per day, with as much good hay as they would eat without waste. It will not pay the cost and trouble to grind any kind of grain for sheep, though it always should be done for cattle or hogs. No whole grain passes the stomach of a sheep undigested. The ewes belonging to this flock of wethers (those of the same year's growth) were sold when two years old to go to western New York, where I have no doubt they will contribute to the improvement in fine wool.—*N. E. Farmer.*

THE NEW ENEMY OF WHEAT.

Louisa C. H., Dec. 8, 1855.

To the Editor of the Examiner:

I write to inform you that my wheat crop has been attacked by myriads of small bugs that are likely to do considerable damage. They are confined principally to the blade, though as the weather grows colder I have noticed them most plentiful below the surface of the ground. In their first stage they are of a pale green color, and much resemble the Rose Bug; in their second stage the color is changed to a dark brown, and finally they become winged. I am unable to inform you at what time these different changes take place. I discovered them in my wheat some two weeks ago; it has now the appearance of being scalded, and can't possibly make half a crop. So tender did they appear when I first saw them, I had hoped the cold weather would destroy them, but as yet they are on the increase. I would inquire what they are, whence they came, &c.? That it is a joint worm in a new form, I shrewdly suspect. Will you or some of our experienced farmers give us more light on the subject?

Most respectfully, E. P. Goodwin.

A correspondent from Buckingham speaks of a new pest to the wheat in that county, which we suppose to be the same as that referred to above. A small, round brown bug is mentioned, and on the stalks from 10 to 20 very diminutive animals, resembling plant-lice. What connexion there may be between them is not known. The plant-lice, a species of the aphide, are self-propagating wretches.

We find the following notice of them in one of St. Pierre's works:

"The aphide has the strange property of reproducing alone—although there are males, which have wings to fly where they please. Bonnet received an aphide at the moment of its birth and reared it alone. The latter, without having communication with any other being of its species, produced its little one; one of these, sequestrated in the same way, produced a new generation, and Bonnet thus obtained five consecutively, without the assistance of any male, during the space of five weeks in the course of a summer. He concluded that these nine successive generations had been begotten by the same mother by the male which had fecundated in autumn the eggs from which she issued the following spring; for it is remarkable, that the aphide, viviparous in summer, becomes oviparous in winter."—*Richmond Whig.*

To Mr. F. G. Ruffin:

My Dear Friend: You cannot imagine how thankful I am for your having published Mr. Franklin Minor's speech. My thankfulness is deepened by the fact, that I know you were instrumental in prevailing upon Mr. Minor to address the Agricultural Society. I believe I have read most of the agricultural speeches that have been published in this country, and I do not hesitate to say, that in my humble judgment, this is the most appropriate one I have ever read; and better calculated to do good than any other. Its boldness, originality, and truth, is but a reflection of the strong and pure mind that gave it birth. There is one suggestion of Mr. Minor's, that I earnestly beg our brother farmers to adopt, and that is, to communicate to each other, through the press, all things useful that we may learn from experience, pertaining to our high calling, and thus create a fund of knowledge, from which future generations may draw. If the farmers heed this advice, it will be your duty, in part, my friend, to winnow the contributions, and preserve the grain. I will promise, for one, to contribute my mite.

Your friend, G. F.

Small Horses.—The arguments may all be in favor of great size, but the facts are all the other way. Large horses are more liable to stumble and be lame then those of the middle size. They are clumsy, and cannot fill themselves so quick. Overgrown animals of all descriptions, are less hardy than those of a smaller size. If theory is to be resorted to in order to determine such questions, we suggest to the lovers of overgrown animals the following:

The largest animals of class are of unnatural growth. They have risen above the usual mark, and it costs more to keep them in position than it would were they on a level with their species. "Follow nature," is a rule not to be forgotten by farmers. Large men are not the best for business; large hogs are not the hogs to fatten best; and large hens are not the best to lay eggs. Extremes are to be avoided. We want well-formed animals rather than such as have large bones. Odd as it may be to the theorist, short-legged soldiers are better on the march, and officers say they endure hardship longer than those of longer limbs. On choosing a horse take care by all means that his legs are short. If they are long, and split apart like a pair of dividers, never inquire the price of the dealer. Make no offer.—*Ind. Farmer.*

For the Southern Planter.

Mr. Editor:—The State Agricultural Society offered a premium for "some efficient and reliable remedy, such as may judiciously be used by farmers, to secure the wheat crop against the ravages of the *joint worm*, to be tested in such manner as may be satisfactory to the committee, and to be presented in time to be tested in the next crop, or longer, if necessary." The liberality of several members of the executive committee, by individual contribution, very largely increased the amount offered and made this premium the largest ever proposed by the Society.

The size of the premium, together with the importance of the subject to which it related, caused the committee to feel the full weight of the responsibility of their position, and led them to give to the communications referred to them their most careful consideration. In interpreting the conditions upon which it was offered, the committee decided that the remedy proposed should, 1st, be effectual as a remedy against the ravages of this insect; 2d, be within the reach of wheat growers generally as regards cost and character and should not materially curtail the wheat crop of the State nor interfere with the cultivation of the other staple crops of the country. Acting under this conception of their duty, the committee were unable to award the premium, but as several of the communications contained suggestions which in their opinion might prove useful to wheat growers in mitigating the ravages of our enemy, they instructed their chairman to publish in the Southern Planter such a report as would give the public the benefit of these suggestions. In discharging this duty I regret that the limits of a newspaper article will confine me to the remedies proposed, without drawing upon the communications before me for much of interest in the history and habits of the joint worm, which I find some of them to contain.

There were five papers laid before us, one of which was withdrawn upon the author finding that he had mistaken the insect.

1st. Mr. James Hogue, of Goochland, recommends an application of forty-five wagon loads of manure, twenty-five bushels of lime, and two bushels of salt per acre, with thorough preparation of land by proper drainage.

2d. Mr. J. R. Pugh, of Fairfax, recommends the consumption in the barn-yard of all wheat and rye straw, before the month of March, at that time the careful collection and burning of all waste straw and stubble left in the field. He asserts that after the winter's frost, the stubble may be raked up clean, at an expense of 25 cents per acre—one hand raking from four to five acres per day. He uses iron-tooth rakes with heads 3½ feet long.

3d. Dr. Thomas W. Merriwether handed in a paper, already published in the Southern Planter, the essential point of which is the early maturing of the crop to a certain stage, before the period arrives for the ravages of the insect, and the means to attain this are, early and thorough preparation, and seeding early kinds of wheat, with guano and other manures, except where the fertility and favorable exposure of the land are such as not to require them. He "begins seeding the middle of September, sows for the first week pure Mediterranean wheat, then one-third purple straw mixed with it, and finishes with purple straw alone. If any Poland or late wheat at all, it should be sowed early in October, on tobacco land, or the most favorable spots as to fertility and exposure."

4th. Mr. B. Johnson Barbour, of Orange, disclaims any intention of competing for the premium, (as his communication does not meet the requirements of the conditions proposed) but avails himself of the opportunity to give his brother farmers the benefit of his experience and observation. His communication gives an interesting sketch of the "rise and progress" and habits of the joint worm—reviews and discusses some of the remedies already proposed, and gives what he considers the only sufficient remedies and safe-guards for individual farmers and for large farming communities.

As regards "*burning stubble*," Mr. B. shows its utter inefficiency, by stating the fact that the stubble of the injured crop is generally so light and sparse, that fire will not spread in the dryest weather. The plan he asserts was ineffectually tried in the intense drought of 1854. In ordinary seasons the green vegetable matter (springing up the more quickly and rankly from the failure of the crop of wheat,) and the frequent wet spots, particularly low grounds, will arrest the fire. Fall and winter burning of stubble is ineffectual, because there is a fall as well as spring deposit of eggs by the joint fly. But even if the stubble would burn at any time, experiments Mr. B. has made, show that a rapid fire only consumes the light filamentous portions of the stalk, leaving the hard joint in which the grub is reposing unscathed.

Guano, early seeding and *early varieties* he considers "valuable auxiliaries," but gives the following statement of facts to show that they cannot be confidently relied upon: "In the fall of 1852, in one field I commenced sowing wheat

(Mediterranean and early purple straw) on the 18th of September, and finished on the 28th, applying guano liberally everywhere, and yet after a fine promise it made not more than half a crop, because it was touched on two sides by the stubble of the past year."

After throwing doubt upon the promises held out by entomologists, that a *parasite* will appear, which will destroy the joint-worm, and expressing a fear that we "shall be overwhelmed before Blucher comes up," Mr. B. proceeds to offer the following remedy:

"To the individual farmer I would recommend stubble fallowing—to plough his land deeply, turning the furrow slice as flat and covering the stubble as perfectly as possible. As auxiliary to this, that the wheat should be sown early, (say from September 15th to the 5th, or at latest, the 10th October,) and in as large and compact breadths as the circumstances will allow, for the reason that the joint worm does most damage on the edges. Long strips of wheat should be especially avoided, as they are almost inevitably destroyed. Guano, of course, should be liberally applied, and early varieties of wheat sown. I have found the early purple straw, or Ruffin's improved purple straw, or the little red, (for it has as many *aliases* as an old rogue,) to be the safest and surest variety. I would farther recommend the use of a heavy roller in the spring, for the double advantage of settling any loose wheat, and of so closing the soil as to cut off every avenue of escape from the joint worm buried in the ground." After mentioning the fact that we are always exposed to the ravages of the insects bred in our neighbor's stubble fields, Mr. Barbour urges "combined action throughout the whole region infected by the joint worm," and suggests, that if practicable all the wheat land throughout that region should be stubble-fallowed, as much as possible put in wheat with guano in the fall, and the balance in oats in the spring. One effect of the use of guano, Mr. B. supposes to be the enabling of the plant to take up silex freely, which hardens the stalks, and prevents the joint fly from piercing it with its ovipositer.

I have thus given you, Mr. Editor, all the remedies proposed in the papers submitted to the committee. As I have paid some attention to the subject myself, and as this paper is intended rather as a contribution to the Planter, for the benefit of parties interested than a committee's report, I take the liberty of adding a few remarks of my own. To you who have the misfortune of an acquaintance with the joint worm, I need hardly say, that none of the recommendations here made can be considered as a remedy for the evil we labor under. The means proposed by Mr. Hogue, if effectual, would be impracticable, on account of the expense attending the application. But in my opinion, even the heavy manuring he proposes would not make a crop without the observance of other precautions. I have seen in my own neighborhood a wheat crop upon a half acre lot, which for years had been used as a feeding lot for drove cattle, and so rich that it would be a waste of manure to apply it, as completely destroyed by joint worm as any crop around it. When the joint worm is in "full blast," you can't make wheat upon a small scale. Extent of area is all important in guarding against the ravages of joint worm.

Mr. Pugh's recommendation in theory sounds well, but I question the practicability of cleansing the stubble field of all the infected straw by any process short of picking it up by hand.

Dr. Merriwether's remedy is knocked in the head by Mr. Barbour's experience, and Mr. Barbour's remedy, it appears, has failed in ridding the people of Massachusetts of an insect very similar to, if not identical with, joint worm. Dr. Harris, in his work on insects being injurious to vegetation, says: "It has been found in Massachusetts that ploughing in the stubble has little or no effect upon the insects, (eurytoma hordei,) which continue alive and uninjured under the slight covering of earth, and easily make their way to the surface when they have completed their transformation.' Notwithstanding this authority, I am satisfied that the suggestion is a good one, and that very many of these insects are destroyed by this process, while the period of transformation in others is delayed until the straw becomes too hard to be pierced by the ovipositer. This recommendation, with early seeding and early varieties of wheat, free use of guano, thorough preparation of land, sowing large and compact bodies, burning all places of vegetable harbor and all waste straw, and refraining from grazing or otherwise retarding the growth of the wheat, is all that man can do to protect himself against the ravages of this insect. The rest he must leave with Providence. And let me say, Mr. Editor, notwithstanding Mr. Barbour's sneer at parasitic insects, that in my opinion the race of the joint worm is well nigh run in this neighborhood. Last fall I observed a most marked increase in the numbers of parasites compared with the joint worm. In my own stubble I found almost as many of the former as the latter, and the consequence was, that my crop was not materially affected by joint worm. I don't think I lost one per cent. of my crop from this cause. The two insects are readily distinguished from each other by the naked eye, both in the larva state and as perfect insects. The larva of the joint worm is about one-tenth of an inch long, is of a pale yellowish white color, with an internal dusky streak, and is destitute of hairs. The larva of the parasite is of inferior size, much whiter in color, and is sparingly covered with hairs. I give you Harris' description of the two insects in their perfect state, which accords with my observation of them. The joint fly is "jet black and slightly hairy. The head and thorax are opaque and rough, with dilated punctures. The hind body smooth and polished. The thighs and claw-joints are black. The knees and other joints of the feet are a pale honey yellow; the fore shanks pale yellow, faintly tinged with black only on the outer edges, in a few indi-

viduals. The females are twelve or thirteen hundredths of an inch long. The males rather smaller, and distinguished from the females by the following characteristics : They have no piercers; the joints of the antennæ are longer, and are surrounded with whorls of little hairs; the hind body is shorter, less pointed behind, and is connected with the thorax with a longer stem or peduncle." "The head and thorax" of the parasite "are of a dark metalic green color; the abdomen is slightly depressed, polished, purplish black above, bright copper colored beneath. The antennæ black, except the basal joint, which is of a brilliant copper color. The thighs are pale yellow; the shanks and feet blackish, the hind pair with a broad, pale ring around the bottom of the shank and the contiguous part of the foot. The length of the body is ten hundredths of an inch, being somewhat less than the eurytoma."

Upon this latter insect I hang my hopes, and although I don't feel at liberty to vote him the society's premium, I promise him most faithfully my profound thanks should he do his work as completely as I believe he will.

I would apologise for the length of this article, but that an apology will add to its length.

Yours, truly, R. W. N. Noland.

Man v. Horse.—Some interest was created lately in the sporting world of Paris, by the announcement that Genaro, a Spanish runner, had wagered £2000 that he would run against any number of horses on the race course of Longchamps, which is 2296 yards round—the horses to trot or gallop, but not to walk, and Genaro not to be allowed to walk either—the winner being the horse or man who should go round the course the greatest number of times. Ten horses came to the post. In the third round Nobbler and Miss Grinaway were put out of the race for having fallen into a walk; for the same reason Penman was beaten the fifth round, Scavenger in the seventh, Pacha in the thirteenth, Coquette in the fourteenth, Taurus and Sultane in the twenty-third. In the twenty-third round Genaro was also beaten, and fell fainting. The two horses that remained (Mr. Powers' Lolo and Mr. Jacob's Old Ireland) are known as steeple-chasers, and their owners divided the stakes.

Profit in keeping Fowls.—An intelligent farmer lately published the following result of his experience in keeping fowls: He kept thirty-six hens last year, that yielded him three dozen eggs, besides one hundred and twenty-five chickens. The net proceeds of the sale were $59 37, the family having had, of course, what eggs and poultry they wanted for their own consumption besides. The whole cost of the grain for keeping the hens was a fraction over $4, leaving a clear profit of $55.

AGRICULTURAL PROFITS.

The Leesburg (Va.) Washingtonian states that Captain George Kephart purchased a tract of land in Loudoun county, Va., four years ago, which cost him five dollars per acre; from a field of this land, containing 100 acres, last fall he got 400 bushels of corn, worth at least five dollars per barrel. After cutting off the corn he put in wheat, sowing two tons of guano on it, which yielded him 2,100 bushels and some pounds last harvest, worth two dollars per bushel. In two years, on this field, which cost two years ago five hundred dollars, he got upwards of six thousand two hundred dollars.

Important, if true.—A citizen of Orange firmly believes and maintains the theory that the Chinch Bugs are *eating up the Joint Worms!* If this be so, then there is good reason to hope and expect that the Chinch Bugs will, in their turn, die of *dyspepsia;* for they are by nature *vegetable* feeders, and animal food will hardly agree with them. It is to the farmer a delightful operation truly, if the Chinch Bugs eat up the Joint Worms, and get poisoned by doing so. It would be another version of the game played by the cats of Kilkenny, which, according to the story, fought until they had eaten each other up.—*American Sentinel.*

BELLS ON SHEEP.

Mr. Editor:—Bells worn by sheep, may and doubtless do, to some extent, prevent dogs from attacking them. The correspondent of the *Prairie Farmer*, (article copied in your July number,) places much more confidence in bells than is generally done by sheep owners in this region. Some believe that flocks carrying bells are more likely to be destroyed than those that do not, as the bells give notice to dogs where the sheep may be found. Certain it is, that flocks carrying bells have been frequently attacked, and the sheep carrying the bells have been killed.

I place bells on my sheep, not so much with the expectation of deterring the dogs, as with the hope (if they should be attacked,) that some one on the farm, some neighbor, or passer by, will be attracted by the noise of the bells, and go to the relief of the sheep. And for that purpose, I put on each flock of sheep ten or twelve large bells, known in the New York market as Oregon cow bells, Nos. 35 and 36, the sizes next to the largest size cow bells.

I use a few No. 6 cast bells, to produce variety of sound, but rely mainly on the Oregon

bell. The heavy, dull sound of the wrought bell, can be heard much farther than the sharp shrill tone of the cast bell. A flock of sheep carrying ten or twelve large bells, suddenly aroused by dogs at night, will give a wild cry of alarm, rivalling the fire bells of a city. I would prefer bells that could be heard a mile; such bells may answer two purposes—they may alarm the dogs attacking the sheep, and if not the dogs, the owner or some enemy to sheep-killing curs.

Small cast bells I consider entirely worthless. In a windy day, they cannot be heard two rods from the sheep, and not far at any time. The useful bell is a large wrought one, with a dull heavy sound. It should be well strapped, and properly adjusted to the neck of the sheep; if hung too loose, it will make but little noise, and impede the motion of the sheep. Neither should it be buckled too tight. A strap 18 to 20 inches long, 1¾ to 2 inches wide, with a buckle and keeper of the same width, sewed to one end of it, will be found a very convenient fastening.

I cannot see that the weight of a bell makes any difference in the condition of the sheep; those carrying bells thrive quite as well as those that do not, and if it was not so it would be better to supply the ewe flock with a few wethers, for the bells, or that a few ewes should be worn out carrying them, rather than have the flock run and partially killed by dogs. A flock badly torn, or scared by dogs, seldom thrives or does well after.

James Slocum.

Brownsville, Fayette Co., Pa., Aug. 1855.

Remarks.—We fully concur with Mr. Slocum in his views on the subject of bells for sheep. The kettle bells are quite too small to make much of an alarm. We have used the small bells, not so much as an alarm for dogs, as for the music. A few of different notes in the flock will produce a pleasant sound and pay one for the trouble. The bells got lost after a time, and have not been renewed though often threatened.

The cow bell mixed with the other bells would be of service no doubt, but powder and ball, expended in the right direction, and with good aim, would be more safe. A good, stringent dog-law works wonders in driving out the irresponsible owners, for as a general thing those doing the most damage can generally be traced to owners too poor to keep them from starving unless they do kill their neighbors' sheep. A tax of fifty cents on every dog, and two dollars for every bitch, faithfully put on and collected, will get rid of all dogs that are not really useful. By the laws of this State the counties have the power of enacting dog-laws through their supervisors, and many have availed themselves of the law, with very happy results.—P.—[*Wool Grower.*]

MULES VERSUS HORSES.

Mr. William Ebbets, the superintendant of the Sixth avenue railroad stables in this city, gives us the experience of that company, leading to the conclusion that for labor at ordinary rates of speed, mules are preferable to horses These hybrids may be put to labor younger than horses, being as fit for service at three years old as horses are at five. They are less liable to the accidents of disease, so that on an average they wear one-and-a-half times as long. The amount of feed they require is at least one-third less than that of horses of the same weight, performing the same work.

The horses and mules of the company do an equal daily labor—the average travel is 16½ miles. Of hay they receive the same daily allowance, eight pounds—but in the additional feed of meal, the mules receive but half as much as the horses, yet, as any one may observe, keep in better order. For this reason the company are substituting mules for horses as fast as may be. They pay, on an average, $300 per pair for mules, while the average for horses is not over $225. The expense of raising mules is no greater than that of other costs.

To offset economy in feed, mules can not compete with horses in point of speed. This is due in part to their smaller size, but mostly to difference in composition. The material of which a mule is made seems to be tougher, and less given to motion, so that with the effort a horse uses in making four miles an hour, a mule makes not more than three. Over-sized mules, as over-sized horses, do not wear well. The most economical weight for either animal is about eight or nine hundred pounds A mule will draw a heavier load than a horse of the same weight.

The meal fed is composed of equal parts, by the bushel, of maize and oats ground together. Of this a horse gets one hundred pounds a week, and a mule fifty pounds The drivers prefer the horse-teams on account of their more stylish action.—*Rural N. Yorker.*

TRAINING HORSES.

We copy the following from the London *Sporting Magazine*:

Let it never be forgotten that with beasts, as men, the lesson imparted by kindness is far more readily learned and distinctly remem-

bered than that which is forcibly instilled into a pupil, cowed by severity and confused by fear. Some men are sufficiently fine horsemen and blessed with such nerves, as to be capable of instructing young horses while on their backs, without interfering with their heads, or otherwise withdrawing the attention of the animal from the immediate business in hand; but such riders are indeed uncommon; and therefore it is that I conceive the leading system to be so judicious a method, the beast being left entirely to his own resources, whilst the man's courage and patience run no chance of being over taxed and failing at the critical moment.

Nothing but practice will make a horse a superior timber-jumper. It is a description of leaping which, more than any other, requires coolness and confidence, for it must be done with energy, but without hurry; and to obtain the requisite amount of practice, I conceive a leaping bar to be absolutely necessary. The single bar is only better than none at all; but it is by the double bar that the horse learns to raise himself to his hind legs, and what is termed flinging himself in the form which distinguishes all the best timber-jumpers.

The plan I have always adopted myself, and have found successful, has been to enclose a space of six feet in width, (in fact narrow enough to prevent a horse from wishing to turn round,) and some twenty or twenty-two feet in length, between two strong rails, six feet high in the middle, and sloping gradually down to the two extremities. The upper surface of these rails is made smooth, so that a rein slips easily along them, and the man leading the horse runs outside, where he is in perfect security, and out of the animal's way. In the centre of the lane, so call it, are placed the two leaping-bars, from six to seven feet apart, that being, in my humble opinion, the most effective distance to prevent the scholar from attempting to clear the whole thing at one effort, whilst at the same time it is narrow enough to force him to bend and fling himself to double it cleverly. I generally commence by laying the bars upon the ground or rather on the tan or other soft substance, on which all such tuition should take place, and walk the horse backward and forward over them till he ceases to feel any alarm at the novelty of his position. After this, I raise them some six inches from the ground, and so by degrees get them higher, till he finds it less trouble to make a slight spring and cant his hind legs after him than to knock his shins against the unyielding wood in trying to step over. When this is accomplished without touching, I consider the lesson over, and that we have done well for the first day. The great thing is not to disgust the pupil at the commencement of his studies; if we can only make him fond of them our task is easy indeed. When a certain degree of confidence has been acquired, and the horse begins to jump freely and willingly, a stage at which some reach much sooner than others, I begin to instruct in real earnest, putting up the first bar (which I only use to break his stride, and teach him to raise himself on his hind legs,) a foot from the ground, and the second (which represents the fence and requires all his energies) about three or three and a half feet. He comes into the lists staring about him, and would, if a high-couraged horse, perhaps jump the height of a turnpike-gate, without becoming one bit the wiser; but the low bar compels him to look where he is going, and bring him so near the further one that he must draw himself back as he rises, to keep clear of it. This it is which teaches him to jump as timber should be jumped; and when he can do this cleverly at the height of a common table, he is not very far from being perfect. They get on wonderfully when they have once captured the knack; and although it may take weeks to raise the bar to three feet be not disheartened—a very few lessons will get it up to five.

When the horse has acquired dexterity and confidence, we must vary the performances, placing both bars a good height from the ground, and watching how cleverly he will go in and out without touching; and I think it always advisable, after the first two or three times, to conclude the lesson with a jump at the single bar, which he may be allowed to swing over as fast as he pleases, in order that we may not too much cramp his efforts by continued practice in doubling. Most horses will be found to get quite fond of the amusement, and eager for the exertion; nor would any one believe, who has not witnessed it, the height over which they will bound with the greatest apparent ease; five feet and upward being within the compass of any animal whose hind-quarters are qualified for the hunting field.

Although I would deprecate all attempts to "get them down," I must insist upon the bars being fixed so strong that they will turn a horse completely over rather than give way. I am one of those that think the fewer falls horses have the greater is their courage likely to be; but in case of extreme idleness or awkwardness, it is far better that the animal should sustain a tumble which he will not soon forget, than that he should acquire the idea, so dangerous to his rider, that timber may be

rattled with impunity; and upon the same principle a young horse, till he is perfect, should never be ridden at a weak place. The smaller the fence the better; but "little and good" should be the motto with the tyro. Above all, make the lesson short, and send him home directly when he has done what you required of him. By this means he takes a pleasure and pride in his peformance, and acquires a docility and readiness which all the severity of a Lycurgus could never inculcate.

Any man with good hands, mild temper and a pair of spurs, can do all that is necessary in the open fields; but to teach effectually, it is absolutely essentially to consider the temper, disposition and previous habits of the pupil. If he is an eager, impetuous horse, take him out by himself, and get thoroughly acquainted with him before you bring him into company; when there, let him go in front, and at ease, till he loses his restlessness, and can be coaxed into dropping back to his companions. If he has a heavy boring mouth, ride him in a severe bit with a light hand, till he finds it far pleasanter to champ and play with it, than to inflict pain on himself by hanging on the instrument; if so sensitive that he will scarcely bear his mouth to be touched, put on thick smooth snaffles and running martingales, till he is no longer afraid to ask for that support to which he is entitled at his rider's hands.—In short, in these days of "bridles" there is no excuse for any horse being improperly bitted; and when we have got the key to his mouth, it is our own fault if we put him out of tune.

PRATT'S DITCH DIGGER.

We copy the following account of the above recent invention from the New York Tribune:

Mr R. C. Pratt, of Canandaigua, patented in July, 1853, a machine for digging ditches, which proved one of the best things exhibited at the late State Fair. By its aid one man and two horses have frequently dug 150 rods of ditch three feet deep in one day, and from 50 to 150 (according to the nature of the soil) is considered a day's work. The machine consists substantially of a scoop and revolving wheel---the scoop scraping and the wheel carrying up the dirt until at a sufficient height it is tumbled out upon the sides, at a little distance from the ditch. Several repetitions of the operation are required before the ditch is sunk to sufficient depth.

The specimen exhibited at the late Fair was all wrought iron, and weighed between 700 and 800 pounds. The diameter of the main wheel was five feet, and the breadth of the diggers or lifters fixed thereon, and that of the scoop or curved channel in which they rise, is about nine inches. Although the lifting apparatus is thus narrow, it is practicable and indeed desirable, to make the small plows or cutters which pare the side cuts somewhat wider, so that a ditch of any width, from nine to fifteen inches, may be excavated by the same machine.

The weight of the dirt which is being lifted, the curved channel, and in fact of the whole machine, rests on the diggers, which, like the floats of a paddle-wheel, project from the periphery of the main wheel. As the machine is drawn forward by the horses, the diggers are successively forced into the earth and compel the wheel to rotate---thus throwing up and discharging from the top all the earth caught by the scoop, which is in immediate contact behind. On the extreme rear of the whole is adjusted two cutters or small plows, which pare the sides and tear the earth to a suitable distance below, ready for the next passage of the machine, so that after the first passage the diggers are always pressed down into the ground already loosened, to a depth of from two to ten inches, which loosening may be supposed to regulate the depth to which they will be likely to sink. The wheel and its accompaniments being of considerable weight, great muscular exertion would be required of the attendant to prevent its falling on one side, but for a simple and very effectual provision for its support. The stout iron shaft on which the main wheel freely revolves, is prolonged some two or three feet on each side, and provided with a light carrying wheel mounted loose, as in a common carriage axle, to run upon the ground. These wheels are to maintain the upright position of the machine; but the weight must, at all times, when in operation, be allowed to rest on the diggers. In short, the main wheel and the whole machine must be allowed to sink down into a ditch, or rise to the surface, while the carrying wheels simply run lightly on the surface at the sides. This end is accomplished by bending the axle into the form of a large crank at each side and releasing it from all connection with the machine, except that of passing loosely through the centre. A catch is provided by which the attendant (who is supposed to be grasping a pair of handles in the rear) may make the connection a fixed one at pleasure, and when desiring to leave the field and travel the road the weight may, by this means, be thrown entirely upon the carrying wheels.

N. York Tribune.

THE SOUTHERN PLANTER.

RICHMOND, JANUARY, 1856.

TERMS.

One Dollar and Twenty-five Cents per annum, which may be discharged by the payment of One Dollar only, if paid in office or sent free of postage within six months from the date of subscription. Six copies for Five Dollars; thirteen copies for Ten Dollars, to be paid invariably in advance.

☞ No subscription received for a less time than one year.

☞ Subscriptions may begin with any number.

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☞ Office corner Main and Twelfth steets.

ADVERTISEMENTS.

A limited number will be inserted at the following rates: For each square of ten lines, first insertion, One Dollar; each continuance, Seventy-five Cents. Advertisements out of the City must be accompanied with the money, to insure their insertion.

☞ It is indispensably necessary that subscribers ordering a change should say *from* what *to* what post office they wish the alteration made. It will save time to us and lose none to them.

☞ Postage on the Southern Planter, (when paid in advance,) to any part of the United States one cent and half per quarter, or six cents per annum.

FARMERS' CLUBS.

We do not know that our friends can commence a new year more auspiciously than by the formation of farmers' clubs. We have once or twice published the constitutions of such associations, and there is no need to do so again. They possess two main features, and almost any machinery can put them into play. The first is, a review of the farming practices of each individual member of the club. The second is, the conducting of experiments in the whole of that part of husbandry which is within the scope of the particular community in which the club may happen to be situated, with a view to adopting improved machinery and implements, of commencing new modes of culture, and correct theories.

From having been, during some six or eight years, a member of the first club, so far as we know, that was formed in Virginia, (formed, let us say, in justice to the founder, at the instance of Franklin Minor, Esq., of Albemarle,) we know somewhat of the advantages it conferred, especially as respects the first branch of our subject. By it we have seen a complete revolution effected in the management of particular farms, and great improvements wrought in special instances in almost all. We have seen the diffident encouraged, the rash checked, the doubter confirmed, the laggard quickened, the sloven brushed up, the careless rendered vigilant, the despondent cheered, the ignorant informed; and we can without effort now call to mind particular cases of each of the above. Not that any member was obnoxious to any such implied charges as characteristic traits, but as occasional defects, needing correction by friendly hands.

This correction is best rendered by such a criticism of, and consultation over, the farming practices of each as is afforded by the machinery of such neighborhood clubs. To this the most obstinate will yield, even while contending against it, and the inexperienced or the uninformed will thankfully receive it. How shall it be rendered? To our apprehension, the best mode is by an extemporaneous discussion at first, led by a special committee appointed for the purpose, and a subsequent written report by the same committee, who shall pass under review the whole system of management pursued on the farm, and shall introduce such incidents of the discussion as they may think worthy of notice, and such additional topics of criticism and commendation as they shall see fit. But to do this effectually the committee must pay a second visit to the farm, and thoroughly re-inspect it. In this way, in some three or four years, the management of each farm will be well known, and the defects of each farmer so fully and clearly and repeatedly pointed out, that it will be his own fault if he shall continue to adhere to them.

This is one of the greatest benefits a club can confer; but unfortunately most of them stop just here, and gradually wear out as this purpose becomes accomplished, or interest flags from repetition.

During this period of its highest usefulness, if not its whole life, the club conducts many valuable experiments; but they are for the most part few and simple, such as can be decided in one or at most two seasons, and take up but little attention and less time. They are generally confined to an accurate account of existing operations, or to a few observations on the culture, growth, ripening or harvesting of such staples as now form the main subjects of tillage, or to slight variations of present practices. It is true that "these elicit some incidental good, and when even one in a thousand of them is completely successful, it may confer upon the whole community lasting and incalculable benefit. 'One happy result which can generally improve the methods of cultivation,' remarks Sir Humphrey Davy, 'is worth the labor of a whole life; and an unsuccessful experiment,

well observed, must establish some truth, or tend to remove some prejudice.' "

It is as well, perhaps, that another and very valuable class of experiments is not undertaken generally by farmers: we mean experiments in agricultural chemistry, or the phytology of agricultural plants; for these, "even when conducted upon principles of penetrating and far-sighted theory, are subject to so many mistakes, oversights and disturbances, and make appeals to the joint agency of so many recondite forces and ill understood agencies, that they very often prove utter failures." The expense of such experiments is so great, and the conditions are so numerous, and, to a mind untrained to philosophical investigations, so vague, obscure and perplexing, that very few can afford the time and money, and fewer still have the talent, to prosecute them.

But in the matter of introducing new and improved implements, there is great room for usefulness in Farmers' clubs, and a field for wide, active and noble enterprize. What is the farmer without machinery? and how many times is he multiplied by means of it! The greatest impediment to tillage now is the fact that so much is lost in time; whereas machinery saves it in accumulating power and in spreading the action of a force exerted for a few minutes over a large time. We have proved on another theatre, that the introduction of the threshing machine, whereby the flail was displaced, has saved annual millions to the farmers of Britain, and added just that much time, which is labor, to the productive capital of the country. But the limits of invention were hardly entered on, when a machine was made by which eight common men could in one day do what it formerly would have taken one stout man sixty-eight days to accomplish.

Of all the improvements that are now making in Agriculture, none is advancing at greater pace than the application of machinery, and none is more important, if any can take precedence where all are indispensable to the developement of the art of husbandry. Steam is begining to force its way into the farm, not in substitution, but in aid of the laborer and the beast, and the changes it heralds will increase the dignity of the vocation, because it will require more capital and more sense to condnct the business. Ultimately, however it may be meanwhile, the landed interest will be at the top of society for this reason, and small farms will go to the wall as surely as the spinning wheel and hand loom have done. The "factory system," as it is called, will prevail in the economy of landed property, and the operative take the place of the slave.

It is true that none of this generation will witness that result, but it is not less true that we must contribute our part, will ye nill ye, towards its advent; and that we will do so most successfully if we willingly yield to the law of progress, and ride with, and not against, the tide of time.

There are now agricultural implements of which but few of our people have heard, and in which many cannot believe, which have wrought great revolutions in the saving of time elsewhere, and should be tried, and adapted, if practicable, to our system. Many of these are beyond the reach of individual enterprize, but perfectly within the means of an association of a very few public spirited individuals. Crosskill's clod crusher, for instance, not to weary the reader with an enumeration of other implements, a powerful contrivance for crushing clods and pulverizing the surface by the aid of four to six strong horses, which we lately imported from England through the agency of the State Agricultural Society at a cost of $140, has been proved by a friend of ours—who tried one last fall made after our model—to save upwards of one hundred per cent. in the labour of putting in a crop of wheat on stiff clay, besides an advantage in getting the land in better order than any other means can effect, and a forwardness of work worth probably at least twenty five per cent. more; and the same implement is, at the same time remarkably adapted by pressure to consolidate light lands, and thus improve the crop of grain and ensure a stand of grass. The smallness of its cost divided among many would not be felt even were the implement itself found, or deemed, entirely worthless by the experimenters.

Another branch of subjects for experiments of great importance is the improvement of our existing breeds of animals by importations. Some time ago we showed how easily, by system and perseverance, this could be accomplished to a very considerable extent, and adduced in proof how the sagacious Bakewell, leading his associates of Dishley, had stamped his name upon the most valuable breed of long wooled sheep, and brought them well nigh to perfection from an unpromising stock, and advanced the inferior longhorned cattle of Lancashire to the level of the almost matchless short horn. Without rehearsing the argument or going into a repetition of details, we now reassert that few worthier and no more practicable scheme of improvement can engage the attention of clubs, whether viewed in the light of pleasure, profit, or usefulness. The time must come for the introduction of improved stock into all those portions of Virginia now destitute of it. The railroads are breaking up innumerable pastures, not only with us, but throughout the west. With our own cities as a market for wheat and corn, at such prices as must long continue, the regions which furnish Virginia with stock will shrink into disproportionate dimensions, and the consequent high prices of horses, mules, cattle, sheep and hogs, will both stimulate and compel the production of them in other places. Already the prices of these articles are affected throughout the confederacy by this cause; for it will be found that the Great West has increased her area for wheat much more than for grass. In truth, at the present prices, distant inlands cannot afford, or will not think they can, to keep their lands in grass, and we may look for somewhat the same state of things which took place in Great Britain during the war of the

French Revolution, very much to the injury of their agriculture.

Experiments are wanting too in the introduction of new plants as much as in improvements in the mode of cultivating those we have at present. Our catalogue of native staples is meagre in the extreme. The rice of Carolina came from India, the cotton and sugar of the South came from the same country, and wheat, oats, rye, and most cultivated grasses, hemp and flax, from transatlantic regions. The sweet potato, the pumpkin, the pea—or vetch, as it should be called—maize and tobacco, are all the cultivated plants we can now call to mind that are indigenous; our fruits also, and our cattle of all sorts are imported. The ease with which all these have been acclimated in our admirable climate, in most cases excelling their foreign originals, gives us reason to hope that further experiments in that line will well repay the pains and trouble they may cost. Those who have not looked into the subject will be surprised to find how recently some of the most valuable vegetables both for field and garden crops, and some of the best forage and ameliorating plants, as clover for instance, have been introduced into the husbandry of the best farming counties.

Here are wide fields for pleasurable and useful employment. Shall they be occupied by any portion of our farmers? We fear not, because we have so far seen no symptoms of any decided movement towards them. We do not think the defect lies in want of energy, for there is demonstrably energy enough on one southern plantation to stock a dozen Yankee farms; and the balance of good management is greatly in our favour on a fair comparison. Nor is it to be found in the want of capital, which is applied as liberally here as elsewhere in America. But there *are* defects which unduly check the progress of our agriculture. One of these is the preponderance of the conservative element in the character of the Southern farmer, rendering him hard to move, and inclining him to confound change and improvement. This, perhaps, is to be expected, and is at least an error on the safe side. But the balance wheel which is intended to prevent undue acceleration, should be so contrived as not to check the necessary speed, but, like the true "governor," not only to check excessive speed in the machinery, but also to store up momentum, which shall impel it through extraordinary obstacles. Something like this is our want—a moral balance wheel which shall adapt itself to too *slow* as well as *too fast*. This is to be found, as far as it can be found at all, in such materials as men are made of, in professional education. We do not mean the mere curriculum of an agricultural college, or (what is better, as being all that is necessary,) an agricultural professorship in one or more of our colleges. That is necessary to the complete education of every country gentleman, and the true substratum of the highest farming excellence, which can never be attained without it. We mean now that amount of digested information in reference to the usual branches of a farmer's pursuits which he should possess, but can only acquire by constant and diligent perusal of systematic works on agriculture and other good agricultural writings, by a correct knowledge of his business, to be derived entirely from books, and by testing for himself in experiment, on a small scale, the practices or the theories which his reading or his reflection shall suggest. It is just here that we conceive the fundamental defect in our southern farming lies—just at this place. We do not mean to arrogate to ourselves any superiority in this regard, but on the contrary to assume our full share of shame, when we say that the present amount of professional ignorance in the farming community is amazing and discreditable. Gentlemen enough there are of cultivated tastes, by no means neglectful of general reading, versed in affairs and skilled in political controversy, who are absolutely ignorant of the principles of their art and indifferent to their acquisition.

The necessity of pulverising a soil, for instance, is known: but the best mode of doing it and the reason why it should be done are unknown and disregarded, to the great loss of labour, and, many times, to the great injury of the crop. The necessity of ploughing also is admitted. But when shall it be done deep, and when shallow; and why, in each case? when in the fall, when in the spring; and why? When in wide beds, when in narrow, when in no beds at all; and why? What are the principles of draught? and what the proper width of furrow in proportion to depth, and the necessary angles of inclination to the horizon? When should the furrow be edged, and when inverted? How many who read can answer these questions, or know where to look for an answer?—(for a man may know there is a good reason and be unable to give it.) How many ever thought of them? And yet they are vital to their interests. We could fill a page with queries pertinent as these, but it were tedious, and we forbear.

Compare our agricultural literature with that of foreign countries, and what is it? Nothing, if we except the systematic volume of John Taylor of Caroline, and the writings of Edmund Ruffin—nothing but fugitive essays and addresses, and patchwork periodicals. All other professions and many trades teach principles; agriculture boasts itself of practice, as if the highest practice were not the result of principles. Take an educated man who never saw a plough, but has studied dynamics and mastered its principles, and give him wind and strength to manage the team; put that man in the field by the side of the boor who has grown grey between the stilts, and in one fortnight he can beat him out of sight. How much then is lost when we leave all to the boor, and let our science rust and rot.

Here is the true field for the Farmers' Club. Let them so organize and so proceed as to cultivate and develope the principles of agriculture. Then they would not die out so soon as each member had become conversant with the routine of all others, had "said his say," reported his experiment perhaps just to save his fine, and had written his essay or his farming report. Then there would be perpetual interest in the work, because mind would be enlisted in it, novelty would be linked with improvement, progress with profit, and each laborer in the cause would find sympathy and aid in his fellow. The commercial spirit would then infuse itself into agriculture, and any one can see, but none can calculate, the tremendous aggregate that even ten such clubs would produce in one generation. If it be doubted, we appeal to the influence which lime, marl, gypsum, guano, the plough, the rail road, have exerted on our production.

"The possessor of land has high objects in view and an elevated station to fill. As a superior mem-

ber of society, it may be said, he has still higher views than those of aggrandizing his income. But how can he fill what may well be termed his legitimate station in life with higher advantage to his country, than by promoting the prosperity of his share of its territory; by rendering every farm and every field productive. This is, indeed, being faithfully at his post; and it is a good office in society, which is the more incumbent upon him, as no other man on earth can of right perform it, valuable as it is to the public."

WILLIS'S PATENT STUMP EXTRACTOR.

This machine, which we noticed some time ago, and which has, (for one of common size,) "a purchase of 336 tons," and is capable of almost indefinite extension, can be had at a cost of $150 to $200.

YARN—A FACT WORTH KNOWING.

If the grease which is put upon wool before it is carded, is never washed out, the thread, socks, or cloth, which are made from these rolls will never be touched by moths. So if yarn is to be kept some time before using it should not be washed.

PENNSYLVANIA FARM JOURNAL.

J. L Darlington, the present editor of this excellent paper, retires at the close of the present volume, and will be succeeded by "DAVID A. WELLS, A. M., Member of the Boston Society of Natural History, formerly Chemist to the Ohio State Board of Agriculture, Editor of the Annual of Scientific Discovery, Familiar Science, the Year Book of Agriculture, &c., &c., and A. M. SPANGLER, the original editor and proprietor of the Journal, who will be assisted by a large number of contributors and correspondents who have promised to lend their aid for the future."

We wish all possible success to the new editor and his associates. The FARM JOURNAL has been one of the most welcome of our exchanges from its commencement, and we feel an interest in its continued prosperity.

SUGGESTION ABOUT THE ESCAPE OF NEGROES.

DEAR PLANTER: Tell the Legislature that is now in session in Richmond, that you know a farmer in Virginia, who thinks it would be proper to pass a law to admit negro testimony against any white man, rich or poor, high or low, who is in any way suspected of being engaged in kidnapping negroes; and, moreover, to make it the duty of the assessors to find out and report all the negroes that are supposed to have escaped to the North, so that we may know what the State is annually losing.

Yours, &c., OYSTERSHELL.

TO THE SUBSCRIBERS TO THE SOUTHERN PLANTER.

Finding the duties of correspondence and finance connected with the "Planter" so onerous on myself, and the inefficiency of ordinary clerks so great and so irremediable, I have on this day sold to Mr. NATL. AUGUST, of Richmond, an interest of one half of the paper. I am satisfied that the arrangement will enure to the benefit of all parties, and think that I can now promise that there shall not be further reason to complain of defects in the business department of this office.

Those who are indebted will please make remittance without delay.

In consequence of this change, it is more than ever desirable that all parties indebted shall send or "call at the office and settle."

AGENTS OF THE SOUTHERN PLANTER

Are requested to report immediately. A good many have accounts to collect from whom it is very desirable to hear.

A PROFITABLE CROP.—Mr. Sidney H. Owens, who purchased Winchester's Island, containing 80 acres, for $6,000, a few months ago, has realized half that sum from his crop of broom corn this season. Mr. O. has sixty acres under cultivation from which he realized 40,000 pounds of broom straw, and sold it at prices varying from $7 50 to $10 per hundred—averaging full $8, which makes the gross sum of $3,200. In addition to this he has gathered about three thousand bushels of seed, worth 25 cents per bushel, or $750 for the lot; which makes almost $4,000 for the produce of only sixty acres and expense of cultivation was about $1,000, which leaves $3,000.—*Fred. Herald.*

Will not the Editor of the Herald do the public the favor of getting Mr. Owens to give his mode of managing this crop?

A NEW ENEMY TO WHEAT.—L. A. Alderman of Greenbrier county, Va., writing to the Greenbrier Era, says that his young wheat has been attacked by myriads of small bugs that are likely to destroy the whole crop. They confine themselves to the blade and exhaust the substance of the wheat. They are smaller than the wheat chinch bug, and not so flat; are, at first, of a pale green color; then brown, and finally become winged, and fly off. They seem very tender, and the frosts of winter may probably destroy them, but if they re-appear in the spring, Mr. A. looks for the destruction of his entire wheat crop.

"HAULING" IN OXEN.—A correspondent of the *Rural New Yorker* says, that the cause of "hauling" [pulling against each other] in oxen is to be attributed to their having been worked in too short a yoke. The proper remedy is to put on a longer yoke—say for large oxen, two feet between the inside bow holes. Another correspondent recommends to take a strong cord, (a good fish line will answer,) and tie it to the inside horn of each ox, short enough so they will straighten the cord before they can haul on the yoke. They soon give up, and a few trials will completely break them of the habit.—*Country Gentleman.*

Communications to the Va. State Agricultural Society.

THE SOILS OF THE VALLEY OF VIRGINIA.

[*Premium Fifty Dollars.*]

By Prof. Wm. Gilham, of the Va. Mil Inst.

Introduction—Outline of the Geology of the Valley including an account of the Origin of the Limestones of the Valley—Composition of the Limestones of the Valley—Soils formed from them—Soils, how formed from the Limestones—Composition and Peculiarities of the Limestone Soils of the Valley.

To the Executive Committee of the Virginia State Agricultural Society:

Gentlemen,

Almost all intelligent agriculturists of the present day are aware of the fact that the productiveness of the soils of any district of country is influenced in a very great degree by its geological features. Many, too, are aware of the fact that much may be learned of the physical properties and chemical constitution of their soils from an accurate knowledge of the rocks from which they were derived. Up to the present time, however, but few of the farmers of Virginia have made practical use of these truths, partly I presume because the geology of our State is but imperfectly known, and partly because very little attention has been given to the subject by our agricultural writers. With the view of presenting a practical illustration of the importance of accurate geological information to the agriculturist, hoping at the same time to be able to draw some useful conclusions from the facts presented, I propose in the following paper to present some remarks upon the limestone formation of the Valley of Virginia, and the soils which result from the action of air and water upon the rocks which compose it.

As it would become necessary, while speaking of the lime-stone formation, its origin, geological position, &c., to make occasional mention of the other formations of the valley and of the country further west, a brief outline of the geology of the whole region may not be out of place. Geological surveys of all this portion of the State have long since been made, and reports upon them have been printed, but as they are only to be found in our cumbrous legislative documents, few persons have ever found access to them and still fewer have derived any benefit from them.

Geology of the Valley.

The Blue Ridge, which separates Eastern from Western Virginia, is also the line of separation between the formations to the east of it, and which are known as the metamorphic or primary stratified, from the great fossiliferous deposits which extend from its base for many hundred miles westward. To the east of the Ridge the primary rocks are spread out over a large area, every where showing that they owe their origin to deposition from water, but being at the same time perfectly destitute of any remains of organic life; and every where exhibiting a crystalline structure, and other lithological characters, which show conclusively that, at some time subsequent to their deposition, they were subjected to the action of intense heat. Every where almost, over the extensive area covered by these rocks, the planes of stratification are inclined, or dip, from the Ridge towards the south-east.

The most superficial observation shows that the formations to the west of the Ridge differ in almost every essential particular from those of which we have just made mention. They are all distinctly stratified, which shows that like the primary they owe their origin to deposition from water; but here the resemblance ceases; they bear no marks of alteration by heat; on the contrary comparatively little alteration has taken place in their internal structure, and everywhere among them, from the western flank of the Ridge to the banks of the Ohio, and still farther west, we find the remains of animals and plants belonging to races which have long since become extinct.

Careful examinations of those formations, and of the organic remains which they contain, reveal to us the fact that during the long period in which the deposites were taking place, which resulted in the various formations of which we are about to speak, a primeval ocean covered a wide expanse stretching from the base of the Blue Ridge westward over the area now drained by the Mississippi and its tributaries. Continents of which we have now no traces must have been in existence, supplying the materials which compose these formations, each stratum of which constituted at one time the floor of the ocean. In this ocean, and upon its bed, myriads of living forms found their homes; after death, many of these becoming imbedded in the deposites that were forming at the time, their remains were preserved and have come down to us, constituting a very important portion of the history of the wonderful changes that have taken place upon the surface of our planet.

These formations show that, while they were all successively formed in the same ocean, the continents, the abrasion and destruction of which supplied the materials which were precipitated in succession upon the ocean bed, underwent frequent changes of condition, or outline, by which materials from new sources were supplied from time to time, causing great diversity in the deposites themselves. Sometimes sand alone seems to have been supplied; at others clay and mud; at others large quantities of ferruginous matter were mingled with the other materials; and lastly, springs and streams charged with calcareous matter in solution, poured their contents into the ocean, where more or less of it was secreted by multitudes of moluscous and other animals, which after death left it in the form of shells, corals, &c., while what remained was precipitated by chemical means. In both cases the calcareous deposites were modified in a greater or less degree by simultaneous deposites of fine clay, mud, &c. which in going down became mingled with them. In the organic remains we find the evidences of changes corresponding to the varying conditions just mentioned; at one time but few forms either animal or vegetable seemed to have lived in the waters, while at others, and for long periods, myriads of animals of the lower orders took possession of the then limpid waters. Nearly all of these either suddenly or gradually disappeared and were in time followed by new creations, differing widely from all that had preceded them, but yet adapted in every respect to the condition of things at the time of their creation.

This series of strata, after having acquired a thickness of many thousand feet, and become consolidated by means which we will not discuss here, emerged, in the course of geological time,

with their beds of coal, iron, limestone, marble, plaister, and a host of other valuable minerals, a great con inent, from beneath the waters of the sea. The upheaval of such an immense mass could only have been affected by the action of violent volcanic forces from below. These forces, while they were exerted over the entire area raised, did not every where act with equal intensity, or produce similar effects. Along the line now occupied by the Blue Ridge they seem to have acted with the greatest intensity, producing extensive dislocations, and causing the formation or protrusion of a great mountain chain, the Blue Ridge itself; for a considerable distance to the east of the Ridge, the rocks were tilted, distorted, and bent to a very great extent, and thrown back and folded as it were, to make room for the protruding mass of the Ridge, in such a manner as to give rise to the formation of a number of other mountain chains, whose general directions are nearly parallel to the ridge. The nucleus of the Blue Ridge is composed of igneous rocks, or rocks that were once in a state of fusion from heat. Now the protrusion of such a mass of matter could only take place by the strata, on one side of it at least, yielding laterally or being pushed back, so as to occupy less space in a horizontal direction. This last mentioned condition of things must result in a partial folding of the strata, giving rise to extensive depressions of the strata in some places, while in others they would assume an arched form, thus producing a succession of valleys and mountain chains such as we find on the west of the Ridge. A good idea may be formed of the effects of lateral forces, brought into action by the protrusion of large masses such as we have supposed, by observing what takes place in a series of pieces of cloth or paper placed one above another and kept down by a weight, while forces of compression are applied in a horizontal direction. The pieces of paper or cloth assume the folded or distorted form almost immediately, and any one of the pieces presents a series of little compressions and eminences, presenting in miniature a very fair representation of the undulations of the strata in the mountain region of Western Virginia. As the forces acted with the greatest intensity along the Blue Ridge, so the tiltings, foldings and distortions of the strata were greatest in its vicinity, these effects becoming less as we recede from it, until when the last spur of the Alleghanies is passed, we see but little evidence of dislocation, and the strata are nearly horizontal. During the period of the upheaval, the retiring waters, in consequence of their violent agitation, must have exerted great power in the removal of the strata as they arose, particularly in the vicinity of the Ridge; this is shown by the fact that, in the immediate vicinity of the Ridge, the oldest formation only is exposed, the superincumbent strata having all disappeared in the upheaval, while we come upon the more recent in regular succession as we go westward, the most recent not making its appearance until the western slope of the Alleghanies is past.

The rocks which compose this vast series of strata have been divided by our State geologist into fifteen distinct formations, differing essentially from each other, and readily distinguishable by differences in their composition, in the organic remains which they contain, &c. The transition from one formation to another is seldom abrupt; on the contrary, the rocks which constitute the boundaries of two formations, generally partake of the characters of both. The first nine formations embrace all the rocks that have been classified by the English geologists as belonging to the silurian and cambrian systems; the tenth corresponds to the old red sandstone system of England; the eleventh and twelfth to the lower portion of the carboniferous system, while the three remaining divisions are embraced in the upper portion of the same system, and constitute the coal measures of Western Virginia.

Formation No. 1.—The first formation is composed usually of a fine-grained white or grayish white sandstone; it is frequently displayed in extensive exposures upon the western slope and at the base of the Blue Ridge. "Where it rests upon the declivity of the Ridge it presents a gentle inclination to the north-west,* while the subjacent and more ancient strata of the Ridge, in almost every instance, dip steeply to the south-east. In Page, Rockingham, Augusta and Rockbridge counties, this rock forms the irregular and broken ranges of hills lying immediately at the foot of the main Blue Ridge, and sometimes attain an altitude little inferior to the principal mountain. A level region, sometimes of considerable breadth, and strewed profusely with the fragments of this rock, in general intervenes between these rugged hills and the first exposures of the Valley limestones—thus indicating at once the extent of the formation and the violence of the forces to which it has been subjected."† This formation contains but very few organic remains, and seem to have been cotemporaneous with the first dawn of organic life upon the globe.

Formation No. 2.—This formation is composed principally of limestone, and is the prevailing rock of the Valley of Virginia—the region of country included between the Blue Ridge, with its inflected continuation the Poplar Camp and Iron mountains on the east, and the Little North, with a portion of the Big North Mountain, including the continuation of the former, Caldwell's and Brushy mountains, terminating with Walker's Mountain on the west, and extending from the Potomac on the north to the Tennessee line on the south.

It is to this formation that the Valley owes the beautiful undulating form of its surface, its fertility, and the pleasing and peculiar verdure of its hills and valleys.

The strata composing this formation dip as a general thing to the north west, and where there has been no inversion of the strata in the upheaval, they rest upon the sandstone of No 1, the formation already described. In some portions of the Valley however, these rocks like those of No. 1, have been tilted so much in their upheaval, as to dip slightly towards the mountain in a south westerly direction, and at their junction with the sandstones of No. 1, appear to underlie them, or belong to an older formation. During the geological period in which this series was in process of formation, we have the evidences of clear waters and a quiet ocean, into whose bosom were brought finely comminuted materials, such as fine mud and clay, together with calcareous matter in

*The sandstones, however, in many localities, are almost vertical, and actually dip slightly to the south-east, or towards the mountain.

† Pro.. Rogers' Reports.

solution. The appearance of calcareous matter was the signal for the creation of an innumerable host of animals, which in their development had the power of secreting much of the carbonate of lime contained in the water, and at their death left their stony habitation in the form of coral reefs, beds of shells, or finely comminuted calcareous mud, to form no inconsiderable, if not the principal portions of the series of strata then forming. Such calcareous matter as was not secreted by animals found its way to the bottom as chemical deposits.

As we might expect from their origin, and the extent to which these rocks are developed in the Valley, we find them varying in color from a dark blue, almost black, limestone, through the various shades of grey, to pure white; at the same time they present every modification of texture from the uniform and compact grain of marble, susceptible of high polish, to the soft and slaty, or the hard arenaceous structure; and exhibiting every variety of composition, from pure carbonate of lime, to silicious or aluminous rocks, in which calcareous matter ceases to be the predominating constituent. Occasionally the limestones assume a decidedly slaty structure, and sometimes run into the slate, all of which are more calcareous in character.

Associated, and sometimes interstratified with the limestones, are beds of silicious rock, denominated chert or hornstone, called however flint rock through the Valley, generally of a blueish gray color, sometimes vesicular, or full of little cavities, at others compact and flinty in structure. This rock is generally very hard and brittle, and when exposed at the surface is apt to break into very small fragments by the action of the weather, and become thickly strewed over the surface of the ground and in the soil. The lime stones in the vicinity of these beds are highly silicious, and sometimes the beds of limestone contain hornstone concretions in great numbers.

The limestone formation of the Valley, in an economical point of view, is second only in importance to the great coal formation of Western Virginia; it is largely developed in every county of the Valley, and where ever it is found, it in some way contributes to the comfort and prosperity of the inhabitants. Some of the rocks composing this formation, it has been before remarked, take a high polish; they are in fact true marbles, some of which are beautiful, and valuable for most of the purposes to which marble is applied. Many others again are hydraulic in character, and when burned and ground, furnish a cement equal in quality to the best northern cement; while in almost every neighborhood are to be found inexhaustible supplies of limestone, of such purity as to yield lime of the best quality for architectural and agricultural purposes. An attempt has been made to show that the adaptation or nonadaptation of any particular limestone for making lime or cement may be determined from the color, and certain other appearances, but I am satisfied that no uniform rule can be given on this subject. In selecting a limestone for a cement an actual trial of a sample, or an analysis should be made, and in case the stone is wanted for common lime, the only sure way is to have a careful analysis made. I know of an instance where a beautiful white limestone, apparently pure, was largely used for making lime for sale to the farmers of Eastern Virginia, which proved on analysis to be highly magnesian in character.

But important as this formation is in supplying building stones, marble, cement, and lime, its principal importance after all results from the fact that the disintegration, or wearing down, of the limestones produces soils, which, while they present great differences in quality, are on the whole very fertile and well adapted to general cultivation.

Of the composition of the limestones, and their influence in the formation of the soils of the Valley, I shall speak, after presenting a very brief sketch of the formations which bound the Valley on the west.

Formation No. 3.—This formation consists of a series of slates and slaty sandstones of a bluish black color, sometimes running into lead color and yellowish brown; their structure is laminated and fissile. Occasional bands of carbonate of lime, containing organic impressions, are met with, and sometimes the slates themselves are somewhat calcareous, particularly the lower strata near the Valley limestones. Sulphuret of iron, iron pyrites, is very generally diffused through the rocks of this formation, giving rise to numerous mineral springs of a sulphurous character.

These slates frequently resemble the slates of the coal measures, hence many persons have been led to believe that coal must be near, and some have gone so far as to expend considerable sums in searching for it. No coal has ever yet been found in any formation of such ancient date, and therefore, much as the appearances of the formation may indicate it, there can be no reasonable grounds for expecting to meet with it here.

This formation is developed to a very considerable extent in a number of places in the Valley, resting upon and covering up the upper beds of the Valley limestone; it is also displayed all along the flanks of the several ranges of mountains which form the western boundary of the Valley. A wide belt of this formation extends from the Potomac to the base of the Massanutten mountains; a narrow zone of it encircles the bases of this range and the Peaked mountains; and from the southern extremity of the latter, a belt of varying width runs through Augusta into Rockbridge. Near the Potomac, the belt is divided into two branches, a strip of limestone occupying the interval between them. It also underlies the House mountain, the Short Hills, Purgatory mountain, Tinker, Catawba, Fort Lewis, Draper's, and Lick mountains, and appears a belt of varying width skirting their bases. It also appears in other places in the Valley covering minor areas. Along the western margin of the Valley we find this formation extending along the base of the Little North Mountain from the Potomac to its termination in Rockbridge county; thence after a slight inflection to the west, it extends along the base of the main North mountain, and its continuation the Purgatory mountain, to its extremity, whence it turns, taking the western flank of this mountain. It also extends along the flank of Caldwell's mountain, and continues to skirt the North or Brushy mountain to its termination in Washington county.

Formation No. 4.—This formation is composed principally of beds of hard, massive white or greyish white sandstone. This formation, resting upon the slates of No. 3, constitutes the principal mass of the mountains, such as the Massanutten, House, Short Hills, &c., which rise up in the Valley, and

is extensively developed in the North and other mountain ranges which bound the Valley on the west. This rock, from its hard and unyielding nature, and from its frequently dipping into the sides of the mountains under a steep angle, gives rise to the long lines of bold white cliffs which form so remarkable a feature in these, as well as in many other mountains of Western Virginia. Low down upon the flanks of the mountains, which are composed principally of this rock, and at their bases, the debris from above, consisting of sand, pebbles and large weather-worn fragments, forms a deposit which sometimes entirely covers up the slates of No. 3, and extends over upon the limestones, producing various modifications in the limestone soils. So also on the banks of streams that flow from or through this formation, the soil is in many cases materially modified by the mingling of detrital matter from the mountains with the soils produced from the disintegration of the limestones.

The other formations of the series, with one or two unimportant exceptions, where one of them caps a mountain in the Valley, are all found in Western Virginia beyond the Valley, therefore I need not make further mention of them.

In all the formations of the Valley there are extensive beds of iron ore of good quality; lead is found in No. 2; manganese in No. 3, &c; but as these exert no special influence agriculturally, I pass them by.

Composition of the Valley Limestones.

Let us now enquire into the composition of the limestones of the Valley, and after we have settled that question we shall be prepared to discuss their influence in the formation and modification of soils. It will be readily inferred from what has already been said in relation to these rocks, that they must present great diversities in composition, otherwise we should not meet with so many different varieties. Yet while they do differ greatly in composition, this difference results from the difference in the *proportions* of the materials present, rather than from differences in the substances themselves. Thus we find a limestone taken from one section of the Valley, contains the very same substances that are found in one taken from any other locality, but when we make a comparison of the proportions of the various constituents present, it is then that differences in their composition become apparent. Many of these limestones were analyzed by the chemist attached to the geological servey; I have also examined quite a number, but as my investigations may be said to have commenced, where the gentleman above named left off, I shall for the present make use of his results alone. The substances which he almost invariably found associated with carbonate of lime in these rocks are, *carbonate of magnesia, silica, alumina*, and the *oxide* of *iron*. For the better illustration of this subject, I present a few examples of composition, taken from the reports of Professor Rogers to the legislature.

1. Hydraulic limestone from Shepherdstown, called "Grey cement." In one hundred parts there were, of—

Carbonate of lime,	38.66
" of magnesia,	9.50
Silica,	42.50
Oxide of iron and alumina,	2.60
Water and loss,	6.74
	100.00

2. Limestone from near Charlestown; hydraulic.

Carbonate of lime,	38.66
" of magnesia,	9.50
Silica,	42.50
Oxide of iron,	2.00
Alumina,	1.50
Water and loss,	5.84
	100.00

3. Limestone four miles from Harpers Ferry, on the road to Martinsburg; color light grey:

Carbonate of lime,	95.86
" of magnesia,	1.46
Silica,	1.83
Oxide of iron, alumina and loss,	.85
	100 00

This limestone is one of great purity and admirably adapted for making the best quality of lime.

4. Limestone from near Christiansburg, Montgomery county; color greyish blue:

Carbonate of lime,	52.50
" of magnesia,	34.34
Silica,	6.84
Oxide of iron and alumina,	0.84
Water and loss,	5.48
	100.00

5. Limestone from Natural Bridge; hydraulic; color blackish blue:—

Carbonate of lime,	53.70
Carbonate of magnesia,	41.00
Silica,	2.86
Alumina and oxide of iron,	0.80
Water and loss,	1.64
	100.00

6 Limestone from Wythe county; colour, yellowish grey:—

Carbonate of lime,	54.30
Carbonate of magnesia,	44.30
Silica,	0.20
Alumina and oxide of iron,	0.93
Water and loss,	0.27
	100.00

In every single instance reported by Prof. Rogers, with the exception of two only, we find the very same substances; in one of these magnesia was wanting, and in the other the bi-sulphuret of iron was present, in addition to all the others enumerated above. I would remark, that I have examined quite a number of limestones from this formation, and without a single exception I have always found all the substances contained in the above examples. Whenever the limestone contains a large per-centage of magnesia and silica, together with moderate proportions of oxide of iron and alumina, with a comparatively small per centage of carbonate of lime, it is almost invariably hydraulic in property. A limestone which contains a very considerable per centage of magnesia, with but little silica, alumina, or oxide of iron, may make a beautiful lime in appearance, but would never produce one of first quality for building or agricultural purposes. Those limestones, however, which, although magnesian to a small extent, contain but small proportions of this

substance, at the same time that the silica, &c., are present in very small quantities, make a lime that is equal, for all the purposes to which this material can be applied, to any to be found. Limestones may be found in almost every neighborhood in the Valley, which contain from 90 to 95 per cent. of carbonate of lime, with not more than one per cent. of magnesia, and such limestones invariably produce good lime. Taken as a whole, the impure limestones, those abounding in magnesia, silica, alumina and oxide of iron, predominate greatly over the purer varieties,—a fact which we shall see is of great importance in the formation of the limestone soils.

But if, as I have assumed, the soils of the Valley, which are well known to be, as a class, fertile, and many of them eminently so, are produced by the disintegration or wearing down of the limestones, then the limestones must contain, in addition to the substances mentioned above, every other body known to be present in all fertile soils, the organic matter alone excepted. Feeling well assured, both from close personal observation and the teachings of science that the soils of the Valley are produced in the way assumed, (the process I shall explain further on) I entered into an examination of the limestones to ascertain whether all the bodies first alluded to could be detected, as well as to determine whether, from the analyses, any peculiarities of soil could be pointed out or explained. From the analyses quoted above, it follows that, if the limestones do contain bodies not mentioned there they must be in small proportions, since the loss in each analysis never exceeded a very small per centage. But this condition of things is not incompatible with eminent fertility in the soils resulting from the rocks, for the reason that the great mass of all fertile soils is made up of a very few substances such as silica, alumina, oxide of iron, and somemties lime, while sulphuric and phosphoric acid, the alkalies, &c, although present, constitute but an inconsiderable portion of the entire mass.

My attention was first directed to the detection of *phosphoric acid;* the process adopted in the examination of the limestones for this substance, it is not necessary to explain here, suffice it to say that it is the best yet discovered. I have analysed quite a number of specimens from different localities, comprising almost every variety of limestone to be found in the Valley, and in all, with one single exception, I was enabled to detect phosphoric acid without any difficulty; in most of them it exists in decided and determinate quantities, while in a few only the proportion is reduced to what we term a "trace," a quantity too small to be accurately determined. As a general thing, this acid is present in greater quantity in the impure or decidedly magnesian varieties, than in those that are purer, the former of which I have before remarked greatly predominate in the Valley.

With regard to sulphuric acid, I found no difficulty in recognising its presence in almost every instance, yet I uniformly found the proportions present exceedingly small, not more generally than what might be termed "decided traces." In an example quoted by Prof. Rogers in his report, the bisulphuret of iron was present, and I myself have met with a similar one; in these cases during the disintegration of the strata, the sulphuret of iron would become oxidized, with the formation of sulphuric acid, so that the soil might contain an abundant supply of this acid when the limestone from which it was formed did not. But examples of this kind are, I am satisfied, rare in the valley, the limestones generally being remarkably free from sulphuret of iron.

The limestones it will be remembered are variously colored, most of them being some shade of blue, running into black; these colors are mostly due to the presence of a small portion of organic matter, which contains ammonia, as I have proved by actual analysis in a number of instances.

The specimens that I have examined for the alkalies, potassa and soda, I have found do contain the substances, but invariably in exceedingly small proportions, little more in most cases than mere traces.

Finally there is no difficulty in detecting traces of chlorine in any of the limestones.

Formation of Soils from the Limestones.

The truth of my assertion that the soils of the Valley have their origin in the wearing down of the limestones, caused by the action of air and water upon them, is so plain to any one who chooses to give the subject a little attention, as to render it unnecessary to offer more than a few words of proof in this place.

In exposed sections that have been recently made, such as in railroad cuts, cuttings for common roads, &c. an observer will meet with frequent examples in which the hard limestone, which is found low down in the cut, goes through several changes in appearance, texture, &c until when near its termination in the soil or subsoil above, it has, without its planes of stratification becoming obliterated, merged into clay, which only wants stirring to make it identical with the soil or subsoil, which rests upon the rock. This phenomenon is of very common occurrence in limestone of a fissile or slaty structure. This gradual running of the rock into soil is frequently noticed by quarymen, who seeing the connection between the rock and the soil, refer in most cases, the origin of the rock to to the soil, rather than the soil to rock, or say they have seen the rock growing in the soil.

Frequent examples of this gradual formation of clay from the decomposing limestone may be found in certain Valley limestones, which, after being removed from their natural beds, are exposed to the action of the weather. At first the whole stone is hard, and has throughout a uniform color; in the course of a few years, sometimes only two or three, the outer surface becomes weathered, changes color, and on being examined closely proves to be fine yellow or whitish clay; while, if the stone is broken, the central portion only will be found to retain the original color and hardness of the stone, all the rest being modified in both respects in proportion to the distance from the surface. I have met with similar examples in stone fences that have stood long; the whole mass of stone has a weathered look, but occasionally a stone is found in which every stage of decomposition may be traced from plastic clay on the surface, to hard limestone in the centre.

A rock of frequent occurrence in the valley, called by most farmers soapstone, furnishes a case in point. This stone, all farmers know, when mixed with the soil in ploughing, &c. as it frequently is, soon disappears, or crumbles down in the soil, and of course becomes part and parcel of it. Now this is an impure limestone, weathered by exposure, which gets its name from the fact that, the calcareous matter having been removed from the surface,

the latter has the peculiar feel attendant upon the presence of fine clay.

Again, the numerous changes that are found to take place in the color, texture, and fertility of the soils of the Valley, within very narrow limits sometimes, must have their origin in changes of composition in the underlying rocks. Let any one who doubts this, observe the very marked differences between two soils in close proximity to each other, one resting upon limestone, the other upon the chert, or hornstone formation, which it will be remembered is associated with the limestones in the Valley, and then let him explain how it happens that one is clayey and the other light and gravelly, or one fertile and the other sterile.

The manner in which soils are formed from limestones, I conceive to be as follows. All water that comes in contact with the rocks, whether spring, rain, or river water, is charged with a certain proportion of carbonic acid, which gives it the property of dissolving carbonates of lime and magnesia in a small quantity. It is to the presence of this gas in water that the lime which is held in solution in all spring and river water of limestone regions is due, and it is to the long continued action of water charged with this same gas that the removal of the carbonates of lime and magnesia from the limestones is due, leaving the silica and alumina in combination with each other in the form of clay, which forms the bases of these soils. The other substances present in the limestone, are retained in greater or less quantity in the clay, and together with it make up the entire inorganic portion of limestone soils. The rapidity with which this process goes on depends, in a measure, on the exposure, but mainly on the composition and structure of the limestone. The very impure slaty varieties, having a fissile structure, yield, as a general thing, more readily than any others; there is, in the first place, less lime to be removed than in the purer varieties and the easy access of air and water to them, to very considerable depths, sometimes hastens the operation and causes the production of deep soils. In the same way the harder and purer limestones, if the strata are quite thin, yield with comparative ease. The compact, massive limestones, however, exposing their upper surfaces only, waste away very slowly, so slowly, that some cannot be induced to believe that they have any thing at all to do with the formation of soils; they, nevertheless, do eventually yield just as all the others do.

It will be remembered that silica and alumina are invariably present in the limestones, and in very considerable quantity in the most of them; these substances are in combination with each other generally in the rock, under the form of clay, which owes its presence to sedimentary deposition, which went on during almost the entire period which was so productive in calcareous and magnesian matters. The materials for these deposites were of course carried into the ocean by rivers, &c., and consisted almost exclusively of the finer particles of clay and mud which remained suspended in the waters until carried far from the shore. The limestones being composed then of these deposites, together with the calcareous and magnesian matters, the removal of these two last from the rocks in the way mentioned above, necessarily gives rise to the formation of soils, most of which have a fine, even textured clay for their base.

As the clay first falls, it of course contains but little organic matter; soon, however, plants suited to such a soil, and so constituted as to derive most of their organic sustenance from the air, spring up; these in dying leave their roots, leaves, &c., and thus a small addition is made to the organic matter of the soil. This process continuing from year to year, the soil each year, from previous additions to its organic matter, being capable of sustaining a more vigorous growth than the preceding, it finally acquires sufficient organic matter to render the clay light enough for successful cultivation, for all the purposes of nutrition, &c. Plants too send down their roots into the subsoil to the depth of several feet, and from it draw supplies of inorganic food such as the phosphates, the alkalies, etc., which in the fall of the leaves, the fall and decay of trees, branches, etc., are returned by the decaying organic matter to the surface soil, so that the latter, when cleared for cultivation has stored up for use, not alone its own supplies of inorganic food, derived from the rock from which it was formed, but very considerable and valuable additions that have been drawn from the subsoil below.

Composition and peculiarities of the Soils of the Valley.

In relation to the composition of the soils of the Valley, I would remark, that I have made but few analyses, and these were partial ones, and only undertaken to satisfy myself of the truth or falsity of the conclusions that I had arrived at from a careful examination of the limestone.

These soils are usually clays of various shades of yellow, and modified materially, both in texture and color, by the presence of organic matter; in the vicinity of the other formations of the Valley, or when the limestone becomes highly silicious, they become light and sandy, sometimes gravelly, but more frequently they are clay with but little admixture of sand. An examination of a subsoil taken from almost any locality in the Valley, where the soil rests upon limestone will show this, while the surface soil will show how much the naturally tenacious clay has been modified and improved by the gradual acquisition and admixture of organic matter. The yellow color is, of course, due to the oxide of iron, which it has been shown is almost universally present in the limestones, and is therefore present in the soils. Where it is present in large quantities, the soil, or rather the subsoil, is of a dark yellow color, running into red, and when it exists in but small quantity the color is light, and sometimes, though but rarely, almost white. Where organic matter is very abundant, the color of the surface soil is different from, and darker than the subsoil.

From the great abundance of lime in the rocks from which these soils are derived, we should at first sight take it for granted that lime is abundant in them; but if what I have said in relation to their formation be true, that is, that the calcareous principle is entirely removed from the rock before soils can be formed from them, it follows that if they contain lime it must be in the forms of sulphate, phosphate, and silicate, and not as carbonate. Moreover, since it does not occur in the soil in the form of carbonate, the probability is that the soils of the valley taken as a class, contain but little lime. The fact that they do not contain calcareous matter, or lime in the form of carbonate, has long been known, and its absence from them is regarded as a remarkable peculiarity. From what has been said above, we see that the absence of calcareous matter, is a necessary consequence, resulting from the peculiar manner in which the soils are formed. I have made a number of careful analyses of valley soils for the purpose of testing this question, and have never found a single soil that was at all calcareous, except in a very few instances where small fragments of limestones, generally in the form of

fine gravel, were diffused through the soil; and even in these cases, after the gravel was removed, the soil proper gave no indication of more than mere traces of carbonate of lime. Soils taken from the immediate vicinity of the limestones gave the same results as those taken from points quite distant; calcareous matter is absent from all, and the proportion of lime which exists in other forms of combination do not seem to be influenced by the position of the soil with reference to the rock.

The actual amount of lime present in the soils is, judging from the examinations that I have made, generally small. The proportion rarely exceeds one per cent.; generally it is far less, many very fertile soils containing only from three or four hundredths to one-tenth of one per cent.; proportions which are much less than are frequently found in soils which owe their formation to non-calcareous rocks.

But if the soils of the valley are destitute of lime in the form of carbonate, and contain it in other forms of combination in small quantities, less even than in many other soils, the question naturally arises, how is it that they are so peculiarly suited to the growth of the grasses, which are well known to be lime plants. Every one who is an observer of nature at all, is struck with the difference between Eastern Virginia and the Valley in this respect. In the Valley the limestone hills are clothed with verdure to the very top, and if a field is turned out or left uncultivated for a year or two, it becomes beautifully set in the native grasses, while the soils of Eastern Virginia are rarely found well set with native grasses, and when turned out, a growth of good nutricious grass is generally the last thing to make its appearance.

The explanation of this is to be found, I conceive, not in any peculiarity of the soil itself, but in the fact that the soil rests upon calcareous rocks, which, acting as it were independently of the soil, yield abundant supplies of calcareous matter to the growing grasses. All food enters the roots of plants in solution in water, and no matter what a soil may contain, the proportions of the various substances which are taken up by the roots will depend upon the solvent powers of water upon them. Now it is well known that all water that flows from the springs, in the brooks, or the rivers of the valley, are calcareous, made so, of course, by coming in contact with, or flowing over limestone rocks; in the same way water finds its way through the soil to the limestones, draws a very minute, yet a sufficient supply of lime from the rock, and by capillary attraction, in connection with evaporation at the surface, it rises to the roots of plants, yielding its lime to them as they require it. As a confirmation of the truth of this explanation, I would refer to the condition of old pastures, or virgin soils that are interspersed with protruding masses of limestone. It is a well known fact, that in almost all such cases, if the sod be turned up in various places, the richest, darkest earth, is found in close proximity to the limestone, showing that there a more vigorous growth of grass must have taken place than in other portions of the soil. Now how shall we explain this, unless we assume that the close proximity of the roots of the grasses to the limestones, ensures a constant, and far more abundant supply of calcareous matter, than they could meet with in other situations?

If this view of the action of the limestones be correct, that is, that they furnish direct supplies of lime to vegetation, independently of any lime that the soil itself may contain, we can readily understand why the limestone hills of the valley may be clothed with verdure, and yet the soils be destitute, or almost destitute of carbonate of lime.

It is a question of no little interest and importance to the farmers of the valley, to know whether the direct application of lime to their soils is desirable, or would be attended with beneficial results. I regret that I can say nothing of a very positive character upon this point; at the same time I shall present a few facts which, if they do no more, may lead to some experiments of a positive character, calculated to settle the question definitely.

Some time since I was applied to by a farmer living in my own neighborhood, to analyse a stone that he had found upon his farm, which disintegrated very readily when thrown out upon the land, and had produced such marked effects upon vegetation, that he had had some ground and applied like plaster to the land, and, as he thought, with very decided beneficial effect. This stone proved an analysis, to be nothing more than an impure fissill limestone; hence the beneficial action must have been due to lime.

A gentleman who had been experimenting with sulphate of baryta as a fertilizer, brought some to me for analysis, together with a supposed sample from another locality, that had been ground and used with decided success. This proved to be a compact limestone, of sufficient purity to be burned for lime.

Other examples of similar applications of limestone, supposed at the time of their application to be plaster, and attended with beneficial results, have been reported to me. I have been informed too, by a very observing and successful farmer, that the farmers who live upon the great valley Macadized road, from Staunton to Winchester, are satisfied that their land for one or two hundred yards on each side of the road, is benefited by the continual top dressing of calcareous dust which it receives from the road.

Again, it is well known in the Valley that the diffusion of small fragments of limestone through the soil, or of the so called soap stone, which is nothing more than impure weathered limestone, instead of being objectionable, results in most cases in actual benefit to the soil.

These facts render it highly probable, to say the least of it, that the application of lime in the form of carbonate, or mild form as it is called, would prove advantageous to most of the soils of the valley; nevertheless, we have a right to conclude, from what was said in relation to the direct action of the limestone, that the very marked benefits, which result from applications of calcareous manures in many parts of Eastern Virginia would never follow similar applications to these soils.

As to applications of caustic lime, which have very frequently been made, the facts that I have been able to collect are most conflicting; some contend that it is a beneficial application, while others are as positive in asserting that they have never been able to discover any improvement whatever in lands that have been limed. Now these discrepencies do not result, in my judgment, so much from differences in soils in this respect, as from want of care and close observation on the part of those who use lime, coupled with the fact, that in no case can the effects of lime be very marked. Lime, when applied to these soils, does not act as a disintegrating agent, to set free alkalies, &c., from their combinations in undecomposed minerals, as it does in many soils, the mode of formation of these soils forbids such an idea; neither is it necessary to neutralise hurtful organic acids, &c., except in rare in-

stances, and therefore we must look for lime to be mainly beneficial after it has assumed the mild form, and precisely in the same way that the carbonate is. Hence its beneficial action, when it exerts any, cannot be immediate and can only be properly judged of, after careful observation of the soil, for a number of years succeeding its application.

Magnesia, although present in the form of carbonate in all the limestones, is never in the soils of the Valley in that form, and for the same reason that lime is not. Carbonate of magnesia being soluble in water charged with carbonic acid, it is removed in the formation of the soil, just as the carbonate of lime is. The quantity of magnesia present in the soil is usually small, but sufficiently abundant for all the purposes of vegetation. It is found in all spring, river water, &c., in the form of carbonate derived from decomposing limestone; and like lime may be, and I have no doubt frequently is, directly supplied to vegetation from this source.

It will be remembered that it was stated when discussing the composition of the limestone, the alkalies, potassa and soda were present, but invariably in very small quantities; hence these substances, although always present in the Valley soils, as is attested by the latter producing plants containing them are necessarily in very small proportions—so small that hardly any valley soil would not be benefited by the application of manures containing them, especially potassa, and so small so as to amount to an actual deficiency in very many instances. When we consider the manner in which the limestones were formed; that they were deposits of calcareous matter associated with fine sedimentary matter of an almost exclusively argillacious character, which we know rarely contains more than traces of the alkalies, we have no right to expect to meet with abundant supplies of these substances in soils formed from them, but should rather be led to the inference, that one of the chief defects of those soils would be the result of a limited supply of the alkalies. That the soils of the Valley are, taken as a class, deficient in the alkalies, there can be no doubt at all; hence the use of manures rich in these substances, particularly potassa, cannot be too strongly urged upon all farmers of the valley who wish to improve their soils. The only manure rich in the alkalies, and at present available to the farmers of the valley is wood ashes. It is greatly to be regretted that even the supply of ashes is quite limited.

Some of the very best farmers of the valley inform me that they have found applications of ashes fully as efficacious as stable manure; others I know who have superior land, but who never fail to use ashes upon their young corn whenever they are to be had; and so marked are the benefits resulting from their use, that the negroes are sometimes afraid to omit applying them to all parts of the field, because they say the corn will tell on them. It may not be amiss to mention an instance coming under my own observation in which the beneficial effects of an accidental top dressing of ashes was very apparent. In passing over a fine field of wheat just as it was about to joint in the spring, a part of which was light, in consequence of the soil having been badly prepared the preceding fall, I observed a small area in the lighter portion upon which the growth of the young wheat was particularly luxuriant. On enquiry I learned, that in the centre of the small area in question, an old tree had been burned the fall before, and the ashes scattered around.

Wood ashes, although more valuable for their alkalies than for anything else, contain, it will be remembered, a number of other fertilizing substances mostly insoluble, but which gradually assume the soluble form in the soil, and hence become useful additions to it. It is partly on this account that leached ashes are useful for manure; they are, however, still more valuable for the alkalies they contain, for analysis shows that after they have been used for making ley they still contain no inconsiderable amount of these substances.

Judging from the results obtained in my analyses of the limestones there can be but little doubt that phosphoric acid is very generally diffused in the soils of the Valley, and in proportions sufficient for all the requirments of a vigorous vegetation. It must be borne in mind, however, that throughout the Valley the grain crops are extensively cultivated, and that of the inorganic matter removed by the grains, about one half is composed of phosphates.

Again these crops are mostly taken to a distant market, or are fed to stock, much of which is driven out of the Valley for sale, so that a comparatively small proportion of the phosphates removed from the soil ever find their way back to it. Hence although the phosphates may be, and are no doubt, in most instances, abundant in the Valley soils, when they are first broken up, we may look for these salts to diminish more rapidly than the other constituents, and unless special care is taken to guard against such a state of things, they must eventually become so much reduced in quantity as to impair fertility.

With regard to the sulphates, the inevitable conclusion is, that they are present in these soils as a general thing, in exceedingly minute proportions. I have already mentioned the fact, that the limestones contain only traces of sulphuric acid as a general thing, which would go far to show, that the soils formed from them must contain it in very small quantities; I might also mention the fact that, while in the analysis of some of the limestone water of the valley, I found no difficulty in detecting the phosphoric acid, even in a small quantity of water, it required the evaporation of four or five times as much water to show that sulphuric acid was present also. This almost universal deficiency of the valley soils explains the action of plaster, the sulphate of lime, upon them, which is known to be very decidedly and almost universally beneficial. The action of plaster is not entirely understood in many cases; its great merit in the present instance is due, I apprehend, to the fact, that the valley soils being deficient in sulphuric acid, the deficient element is supplied in the plaster; that is, the beneficial action of the plaster is mainly due to the sulphuric acid that it supplies. This view of the action of plaster on these soils receives strong confirmation in the fact, that trials having been made with sulphate of baryta as a fertilizer, it has been found just as efficacious as plaster. In this case, there can be no doubt whatever that the beneficial effects are solely due to the sulphuric acid, since baryta takes no part whatever in vegetation.

The proportion of chlorine in the valley soils must be exceedingly small generally; but since growing vegetation requires it only in very small quantity, there is, no doubt, a sufficient supply most of them. Carefully conducted experiments in the use of common salt, would show whether additions of manures containing chlorine would be desirable.

There are some soils of the valley which contain very considerable proportions of manganese as-

sociated with oxide of iron, and there is but little doubt that most of them contain it in small quantity, derived originally from the limestones But as this substance does not seem to be necessary to the cultivated crops, I have not sought for it either in the limestones, or in the soils. The soils which contain it in quantity are darker in color than most of the other soils, even though they may contain much oxide of iron, and are known in the middle counties of the valley as "mulatto soils."

From what has been said in relation to the manner in which the valley soils have been formed, it will be apparent that the origin of the sub and surface soil is the same; the difference in composition, texture, color, &c., resulting from causes already explained. The clay of the surface soil is made lighter by the annual addition of leaves, the penetration of roots, the action of frost, &c., while the subsoil, not being modified by any of these causes, is usually a hard, stiff clay, altogether unsuited to cultivation. The surface soil is usually of a good depth for cultivation; when it is not, it is readily made so by careful management. The subsoil clays, resting upon the limestones at moderate depths generally, and the strata of the latter dipping in most cases under a very considerable angle, the soils have sufficient natural drainage to prevent injury from excessive moisture. At the same time, as must always be the case in close, clay soils, such as most valley soils are, the soil drains slowly after long rains, thereby impeding farm operations, and sometimes retarding vegetation by excluding air and warmth.

These soils are well adapted to the general purposes of agriculture. Of the grain crops, they are, on the whole, from their peculiar texture, better adapted to the growth of wheat than any other, at the same time they rarely fail, with proper management, to produce good, and very frequently superior, crops of the other grains. I have already had occasion to refer to their peculiar adaptation to the cultivation of the grasses, a fact which ought to place the Valley in the first rank as a grazing district, and for the products of the dairy. In the latter respect it equals in capacity to produce, both in quantity and quality, the most favored portions of New York, and it is no fault of its soils, that it is not now celebrated for its dairy products.

In connection with this subject of the grasses, I would mention irrigation as a most valuable aid to the farmers of the valley in the cultivation of the artificial grasses. It is practiced to a very considerable extent at the present time, and with great success; at the same time there are many, very many, hillsides in the valley around which might be carried a stream of water that would more than double the yield of good nutritious grass. The undulating outline of the country, its numerous springs and small precipitous streams, all of which are charged with the carbonates of iron and magnesia, with more or less of several other valuable constituents, all conspire to render the Valley peculiarly favorable to this means of improvement.

The limestone soils of the valley, while they all have certain points of resemblance, resulting from a common origin, differ from each other materially in many respects. These differences are mainly due to the differences in the limestones themselves, although there are a variety of other causes to the action of which minor differences may be referred. The poorest of them are rarely so poor as not to be improvable, and at the same time remunerative, if proper attention is paid to them. The adoption of a rotation in which the soil shall not be taxed, as it too often is, with a succession of grain crops, and in which the green crops, and particularly clover, have a place, aided by the use of plaster, ashes, whenever they can be had, and all the manure of every form that the farm will produce, will eventually bring up the poorest Valley soil.

The chert or hornstone rocks, which it will be remembered are associated with the limestones in various parts of the Valley, being almost exclusively silicious, and very hard, form light sandy or gravelly soils, which, seen in their virgin state, with a heavy growth of chestnut upon them, and with supplies of organic matter that have been accumulating for ages, promise abundant harvests as rewards for cultivation. For the first crop or two after they are put into cultivation they do very well, but soon the store of mineral food that long ages of forest growth had brought up from below, and deposited in the surface soil, is exhausted. From the light nature of the soil, much of the organic matter too is soon dissipated, so that they become prematurely worn out and unproductive, affording a striking contrast to the stiffer, yet for more durable clay soils of the limestones.

Formations Nos. 1 and 4, being composed almost exclusively of hard silicious sandstones, the soils resting upon them are necessarily very unpromising. Fortunately they are only found upon the borders of the Valley.

The slates of formation No. 3 are said to produce fertile soils. I have had but little opportunity to study them, and still less to study the soils formed from them, I am therefore unable at p esent to discuss them, or compare them with the limestone soils.

April 20th, 1855.

PAYMENTS TO THE SOUTHERN PLANTER,

To December 31, 1855.

P Edge, July '55	$1 00	J A Walker, July '56	1 00		
W Rodes, " '55	1 00	Dr J B Anderson, Oc '56	1 00		
R W Lewis, Jan '57	2 00	J H McKinney, Jan '57	1 00		
Maj D C Carver, " '56	2 00	L H Taliaferro, Jun '56	1 00		
J H Maddex, Sept '55	1 00	C P Moncure, Jan '56	1 00		
Capt L R Railey, Jul '56	2 00	Dr H Hunt, July '56	2 00		
Geo M Terrill, Sept '54	1 00	Col McClanahan, Ju '56	2 00		
W Hall, July '55	1 00	N H Duval, Nov '56	1 00		
P Rainey, Nov '56	1 00	W C Daniel, " '56	2 00		
J A Washington, Ja '56	16 00	Jas Huff, Jan '56	1 00		
W Hackworth, " '57	1 00	H H Cocke, " '56	1 00		
Saral J Ayers, " "	1 00	D S Greene, Sept '56	1 00		
Alex Johnson, " "	1 00	G D Scales, Jan '56	1 00		
L D Kennett, " "	1 00	Jno B Smith. Aug '56	1 00		
J Hall, " "	1 00	J B Lucas Jan '56	1 00		
John Johnson, " "	1 00	B Brown, " '57	1 00		
C Heptenstall, " "	1 00	B W Leigh " '56	2 00		
B Wright, " "	1 00	J Puryear, July '56	2 00		
J Goad, " "	1 00	D Y Pankey, Oct '56	1 00		
W H Robert, " "	1 00	W H Roper, July '56	1 00		
W C Knight, " "	1 00	J M Royal, Oct '56	1 00		
W W Downman, " "	2 00	C P Harriso pril '57	1 00		
E Page, Nov '56	1 00	J S Henshaw, Jan '59	3 00		
G T Harrison, July '57	2 00	Dr W Pendleton, Ja '57	1 00		
G H Northam, Oct "	5 37	Dr J R Baylor, Oct '56	1 00		
Geo Bouton, July '56	1 00	O Cobbs, July '56	1 00		
J H Evans, Nov "	1 00	B A Curry, " '56	1 00		
P Habbard, Jan "	1 00	Col W B Dain, Jan '56	2 00		
P W Merideth, " '57	1 00	R H Timberlake, " '57	2 00		
W E Clopton, Nov '56	1 00	W B Harris, Sept '56	1 00		
Ro Pollard, Jan '57	1 00	S J Tibbs, Jan '56	1 00		
P P Nalle, " "	2 00	J R Mann, " '57	1 00		
Wm R Myers, Nov '56	1 00	T G Bumpass, June '56	1 00		
S F Ambler, Jan "	1 00	F F Jones, Jan '58	2 00		
John Burr, Sep '56	2 00	H A Kite, " '57	2 00		
A W Hansend, Sep '56	1 00	N Berkeley, " '60	5 00		
R Chew, Oct '55	1 00	J Patillo, March '57	3 50		
E Lightfoot, June '56	1 00	Jas Miller, Jan '56	1 00		

Jas Miller, Jr Jan '56	1 00	Isham Trotter, " "	1 00
R L Wright, July '56	1 00	W B Randolph, " "	1 00
A H Clark, Dec '55	1 25	N K Foster, Apr '56	1 00
P F Carter, " "	1 25	Jno T Sawyer, Nov '56	1 00
P W Hairston, Oct '56	1 00	A T Maxey, Jan '57	1 00
J Hargrove, Jan '57	1 00	Wm Maxey, " "	1 00
P A Spottswood, Nov '56	1 00	H H Forbes, " '55	1 00
Geo Wilson, Jan '57	1 00	Dr J Stewart, " "	1 00
Jas H Bowyer, June '56	2 00	R W Barton, Mar '58	3 00
D M Wharton, Jan '57	2 00	R S Farmer, Jan '56	1 00
C C Baldwin, July '56	2 00	Sam Drake, " '57	1 00
C B Baldwin, Nov "	1 00	Geo Swan, " "	1 00
N Cunningham, Jan "	1 00	Col C Blue, " "	1 00
W B Gates, Oct '56	1 00	T Eraskaden, " "	t 00
W Y Mordecai, Nov '56	1 00	Capt D Pugh, " "	t 00
R P Graves, Jan '57	2 00	RCarmichael, " "	1 00
HChamberlayne, De '56	1 00	John Smith, July '56	1 00
J H C Jones, Jan '57	2 00	W L Hopkins, Mar '57	2 00
Zach Shirley, July '56	1 00	E B Hunter, Jan '56	2 00
J T Vandeusen, Jan '57	1 00	T C Robins, " "	1 00
J M Bennett, " '56	3 00	G C Dickinson, " '57	1 00
W E Morrison, Dec '56	1 00	W Halladay " "	1 00
T T Tredway, Jan '57	1 00	E Brown, " '57	1 00
D B Hancock, " "	1 00	J E Hughes, Dec '56	1 00
D Coleman, " '56	1 00	Dr L U Mayo, Jan '57	1 00
C Wingfield, " "	1 50	J W Scott, July '56	1 00
T C Reekes, Sep "	1 00	P W Dudley, Nov '56	2 00
J S Kemper, July '56	2 00	A Rix, Jan '57	1 00
Joshua Miller, " "	1 00	H W Latane, Jan '57	1 00
J Haraway, Sept "	1 00	L A Hart, " '56	2 00
Bev Lindsey, Dec "	1 00	G H Lewis, " '56	1 25
R C L Moncure, Nov '56	1 00	N N Mantiply, Nov '56	1 00
John H Suttle, Jan '57	1 00	Yardley Taylor, Jul '56	1 00
Sam S Brooke, " "	1 00	Thos Brown, Jan '57	1 00
P D G Hedgman, Ja '57	1 00	T J Wooldridge, Se '56	1 00
P D Lowry, Jan '57	1 00	A N Douglass, Jan '57	2 50
John Schooler, " '57	1 00	Peter Copland, " '57	1 00
B Davis, " "	1 00	W P Jordan, Jr " '57	1 00
J M Conway, " "	1 00	James Campbell, " '56	0 63
Wm R Smart, " "	2 00	C C Baker, Sept '56	5 00

CONTENTS OF NO. I.

THE LITTLE GIANT
FAR IN THE LEAD OF ALL COMPETITION.

SCOTT'S PATENT LITTLE GIANT CORN AND COB MILL.

Has undergone a trial and test for nineteen months and better, and testimony is daily coming in from innumerable witnesses speaking from experience, and confirming what the public press has already said in its behalf, proving that after a constant use for the above period of time, IT EXHIBITS NO PERCEPTIBLE APPEARANCE OF WEAR. In view of these facts we are prepared to say to our friends and customers generally, that we will give them a full and unqualified guarantee, and as a proof of our earnestness in the matter, we ask permission to give you one upon trial, and if you are not perfectly satisfied after thirty days use of the same that it is far superior to, and will last much longer than any other Mill for a like purpose now in use, you are at liberty to return it and the money will be refunded without one cent of discount or deduction.

The particular properties and qualities of the Little Giant, which place it far in the lead of all competitors, have been claimed for some of the latter in a sort of quack nostrum advertisement, upon the principle, we suppose, that it is quite as proper to trade on borrowed *merit* as on borrowed *capital*. The same advertisement has stated that *Cast Iron* Mills for grinding Corn and Cob will not last more than two years, and that the cost for keeping them in repair for ten years will be equal to four times their original cost. Very possibly this may be the case with some Cast Iron Mills, but it certainly is not so with the *Little Giant*, as the following facts will make apparent to every reader of ordinary intelligence.

Mr. Scott the patentee has secured by *letters patent* a double set of arms in the top of the mill (or what he terms a driver and arms,) for the purpose of more effectually pulverising the Cob and preparing it for the centre of the Mill, which very materially lessens the strain on both Mill and team. In the *common* Mills now in use—*such for instance as we find in borrowed plumage in advertisements*—this double set of arms, or driver, cannot be used without a direct infringement upon Scott's Patent, consequently the strain is so very great upon the periphery and fine grinding surface of the Mill, that it will last but a very short time and necessarily requires a ring (or some additional part) to keep them in working order; and if they require one ring which is upon the shell of the Mill, they will just as surely require another upon the *cone* (or burr) which is more liable to wear out than the shell.

Again, in some of these *common mills* the legs are made very slight and *cast fast to the* Mill; hence in the event of a leg being broken, it requires an entire new shell to replace it, which will be one half the price of a new Mill. Not so however with the Little Giant. Mr. Scott has also secured by *letters patent* what he terms a pocket on the side of the shell of the Mill, so that in the event of a leg being broken either by accident or design, it can be immediately replaced by the most ordinary farm hand and at a very trifling cost; hence we are prepared to prove beyond all controversy, that the expense to run the Little Giant for ten years will not be as much for repairs by one half as any other Mill now in use, from the fact of the simplicity attending any repairs that it might require, added to the durable properties of its inner arrangement with its double set of arms and immense grinding surface. The amount of work it can do with a comparatively small power, the superiority of its work when done, and its capability of being managed by the most *unskilful farm hand*, places the Little Giant a head and shoulders above any similar invention, and entitles it to be recognized as the *Goliah* among Corn and Cob Mills. Conductors of public journals who have seen it in operation by the side of others, and all farmers who have had it in use for any time, proclaim it to be the only effective and reliable Mill for grinding Corn and Cob ever invented. At a time like this when the products of our farms and fields command a high price, and when it is important that the farmers should save as much grain as possible for the markets of the country, no one engaged at farming, or who may have stock to feed, should be without one of these Mills a single week. A trial is all that is necessary to show that it possesses advantages over all other similar Mills now in use, and to commend it to universal favor.

Manufactured and for sale by

ROBBINS & BIBB,
Warehouse 39 Light street, Baltimore, Maryland,
or by
THOMAS BRANCH & SONS,
and
ROULETT & HARDY,
PETERSBURG, VA.

CERTIFICATE.

PHILADELPHIA, December 13, 1855.

MESSRS SANDS & WORTHINGTON,
AMERICAN FARMER,—Baltimore, Md.

Gentlemen:—

We notice in the columns of your very valuable paper, an *interested* one sided statement of the Trial of Corn and Cob Mills at the late Fair of the Maryland Agricultural Society, and thinking it hardly fair that the impressions which are intended to be conveyed by the author of the advertisement, should go broad cast to the entire farming community without some comment, we have taken it upon ourselves to give what we deem and what dozens of disinterested persons will bear us out in asserting to be a fair and disinterested statement of that trial, and we call upon the examining Committee, Messrs. M. T. Goldsborough, and E. B. Calbert to confirm our statement. The first thing that drew our attention to the trial was the appearance of the gentlemen (committee) at the location of the Excelsior or Leavitt's Mill (which we must admit ground very prettily) having two horses attached; the committee then went to the Scott's Little Giant (or Messrs. Robinson & Bibb's Mill) which required one minute and a quarter longer to produce the same amount of meal some one present that the trial was hardly fair with but one horse. The remark was then made by inasmuch as the Excelsior was grinding green corn with two horses, and the Little Giant was grinding hard flinty corn with but one horse: the committee having satisfied themselves of that fact, requested Mr. Leavitt to try the hard corn, which was assented to, and the hard corn put in, and at the second

revolution the sweeps flew all to pieces, the corn being entirely too hard for it. This induced the committee to postpone their examination until the next morning, with the request that each Mill should be tried with the same corn. Then came the trial referred to, and feeling some curiosity in the matter we made our appearance upon the ground in good time to witness it. The commencement was with Mr. Maynard's Champion Mill which produced a half bushel measure half full of meal in five minutes, requiring twenty revolutions with but one horse. Then came the Excelsior, which produced about the same amount of meal in three minutes and a quarter, requiring 10 revolutions with two horses. Then came the Little Giant, which produced about the same quantity in four minutes, requiring fifteen revolutions with but one horse. Then came Mr. Colburn's Mill, which produced the same amount of meal in eight and a quarter minutes, requiring thirty-two revolutions also with one horse. We were under the impression that the Little Giant led the van, but there is the statement and a disinterested community can judge for themselves.

jan tf EDMUND MAHER.